



ANIMAL ATLAS

THE WORLD'S WILDLIFE AS YOU'VE NEVER SEEN IT BEFORE





ANIMAL ATLAS

Derek Harvey





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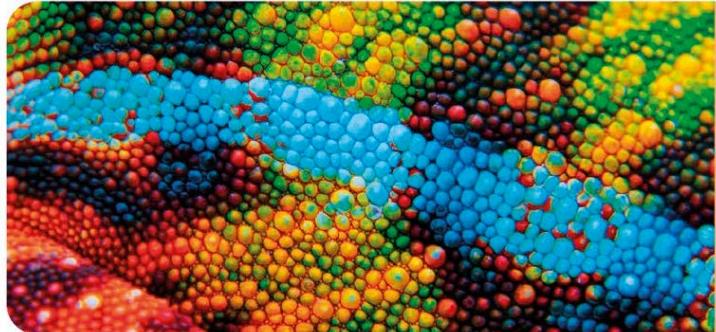
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Foreword

This atlas of animals is about the living world, from the freezing poles to the tropical equator, from the highest mountain to the deepest sea. But this is no ordinary atlas because it shows where the animals live, as well as what they look like, and the forests, deserts, and oceans that are their homes.

Our planet is a very special part of our solar system: it is the only one with life, and its breathtaking variety should fill us all with wonder. Animals of one kind or another survive almost everywhere on its surface, whether on land or underwater. Scientists have described more than 1.5 million species, and reckon there are many times this number still waiting to be discovered. Some, like the humpback

whale or the osprey, range so far and wide that they span the entire globe. Others, like giant tortoises in the Galápagos Islands, live in less space than a single sprawling city. But all animals only succeed in places that supply what they need to survive and produce their babies, and many have very particular requirements. This means that koalas only live in Australia, where they eat eucalyptus leaves and nothing else, and parrotfish only swim in tropical coastal seas where they can munch on coral.

The animals in this book completely depend upon these wild places, but wilderness—the forests, grasslands, even unspoiled oceans—is disappearing. Since humans started building their civilizations



5,000 years ago, nearly two-thirds of the wilderness has gone. Cities have replaced trees, water and air have become polluted, and some animals have been hunted so much that very few are left. Many species have disappeared completely along with the wilderness, and others have been left threatened with extinction. This book tells the story of some of them—but also explains what is being done around the world to help. Today, more people than ever are concerned about the future of planet Earth and its extraordinary variety of animals. These animals are what make our world such an amazing place—we must look after them.

Derek Harvey

Endangered animals

Where you see the panel below, it means the animals plotted on the maps are assessed by the International Union for Conservation of Nature (IUCN, see p.20) as being near threatened, vulnerable, endangered, or critically endangered. If there is no panel, or a species isn't listed, that means the animal is of least concern (not currently at risk) or has not been assessed by the IUCN.

ANIMALS IN DANGER

Lion

IUCN status: vulnerable

Population estimate: 20,000–32,000

Status

The IUCN category shows how endangered the animal is thought to be.

Population trend

An arrow indicates whether the number of animals is rising, falling, or stable.

Population number

The number given is a rough estimate. For some species, the number of animals remaining is not known.





A WORLD OF ANIMALS



Amazing animals

Polar bear

Earth is teeming with life. Even places inhospitable to humans, such as the deepest oceans or hottest deserts, are alive with extraordinary animals. Wherever on the planet animals live, they have adapted to survive in their habitats.

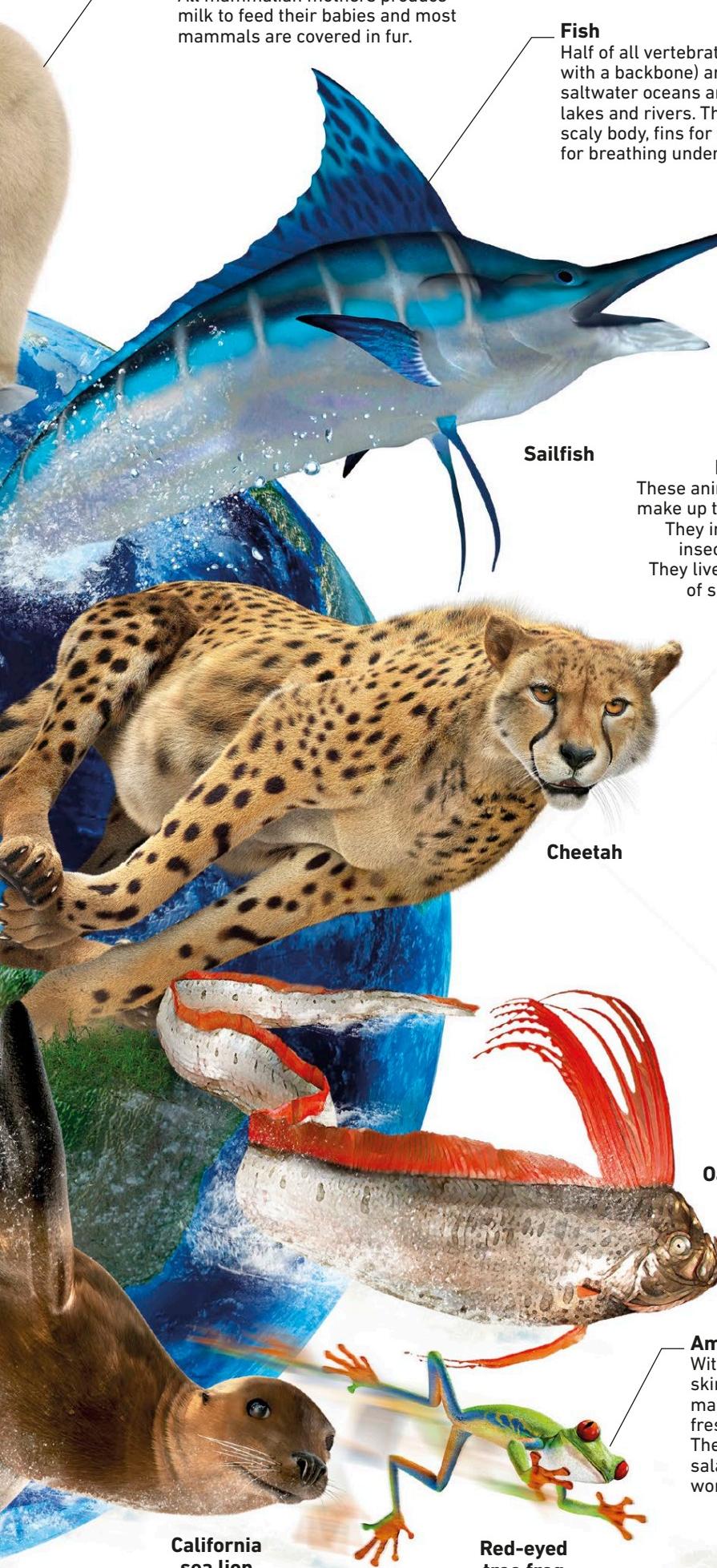


Variety of life

Animals are classified into major groups with shared characteristics: invertebrates, fish, amphibians, reptiles, birds, and mammals. Some of these groups contain more species than others, but all are represented around the world. Some are more widespread than others, too: invertebrates exist almost everywhere, but reptiles do not inhabit the coldest places and amphibians do not reach remote islands.

Mammals

Humans are warm-blooded mammals, but we share this group with thousands of other species. All mammalian mothers produce milk to feed their babies and most mammals are covered in fur.

**Fish**

Half of all vertebrate species (animals with a backbone) are fish. Half live in saltwater oceans and half in freshwater lakes and rivers. They typically have a scaly body, fins for swimming, and gills for breathing underwater.

Sailfish**Ladybug****Invertebrates**

These animals without a backbone make up the biggest animal group. They include worms, snails, insects, and many more. They live in every place capable of supporting animals.

**Monarch butterfly****Oarfish****Amphibians**

With their moist, scaleless skins, amphibians are mainly found in wet, freshwater habitats. They include frogs, toads, salamanders, newts, and worm-shaped caecilians.

California sea lion**Red-eyed tree frog**

Every year, scientists discover and name new species of animals found across the world, from forests to coral reefs. As exciting as these finds are, experts believe that approximately 90 percent of animal and plant species on Earth remain unknown. Listed below are some of the most recent amazing discoveries.

Wasp mantis

Found in the Peruvian Amazon in South America, this praying mantis has a body shape that makes it look like a stinging wasp. First described in 2019, it even moves and walks like a wasp, which helps to keep danger away.

**Wakanda fairy wrasse**

This purple-and-blue fish from an East African coral reef reminded the scientists who first described it of the outfit worn by Marvel's Black Panther. So in 2019 they named it Wakanda, after the superhero's fictional African kingdom.

**Mini frogs**

Scientists who discovered three tiny Madagascan frogs, each smaller than a fingernail, described them in 2019. The three species are some of the smallest frogs found in the world and were called *Mini mum*, *Mini scule* and *Mini ature*.

**Salazar's pit viper**

As fans of the Harry Potter books, the scientists who described this Indian snake in 2020 had a good option to name it. The venomous pit viper was named after the character Salazar Slytherin, who—in the story—could communicate with snakes.

**Alor Myzomela**

Sadly, by the time they are named some new species are already under threat of extinction. Described in 2019, this striking bird—a honeyeater—located in eucalyptus forests on the Indonesian island of Alor is threatened by deforestation.



Biomes

The same type of habitat, such as a desert or tropical rainforest, can occur in different parts of the world. These habitats—called biomes—look alike, even though different animals may live there. Each color on this map represents a different land biome.



Covering the largest land area is a stretch of cold, northern forest called taiga. It is dominated by evergreen coniferous trees, and is home to many animals, such as the wolverine, which range widely south of the Arctic.



Close to the poles, conditions are so cold that the ground is frozen for much of the year, so few trees can grow. This open landscape, home to animals such as Arctic hares, is called the tundra.



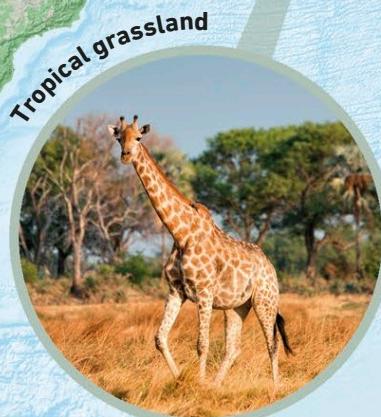
Woodland trees with thick, leathery leaves grow in places with warm, dry summers and mild winters, such as in the Mediterranean home of the asp viper, as well as in southern Africa and southern Australia.



Much of the forest in this temperate zone has trees that are deciduous, growing leaves in the mild summers and losing them in cold winters. North American porcupines and other animals that live here must cope with seasonal changes.



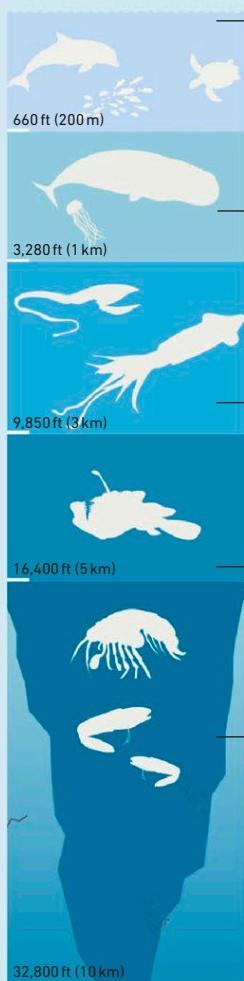
Grasslands usually grow when conditions are too dry for forest but too wet for desert. Temperate grasslands—home of the prairie chicken—are warm in summer and cold in winter, but stay green all year.



In the tropics, many grasslands are at their greenest during the rainy season. In places such as Africa, they support some of the biggest herds of hooved mammals, including wildebeest, zebras, and giraffes.

Ocean habitats

Conditions in ocean habitats are affected mainly by depths: animals living in deeper waters must cope with higher pressures, colder temperatures, and perpetual darkness.



Sunlit zone
Here there is enough sunlight for algae—the “plants” of the ocean—to grow and support the underwater food chain. Most ocean life is found in the sunlit zone.

Twilight zone
It is too dark for algae to grow here, but just enough light reaches for animals to see. Many predatory fish live in the twilight zone.

Midnight zone
No light reaches below 3,280 ft (1 km), so many animals here produce their own light through a process called bioluminescence.

Abyssal zone
Near the cold, dark ocean floor, animals mostly rely on food sinking down from above.

Hadal zone
The ocean floor contains cracks called trenches that descend to nearly 32,800 ft (10 km). The pressures and temperatures in this zone are at their most extreme. Very specialized animals have adapted to live here.

Where animals live

The world is made up of a variety of different habitats, from magnificent tropical forests and freezing, treeless tundras on land to colorful, sunlit coral reefs of the seas and cold, dark ocean depths. Each habitat has its own unique climate and supports its own ecosystem of plant and animal life.



Global origins



Over million of years, Earth has changed dramatically. Continents have split apart and crashed into each other, and large regions have flooded to create smaller islands. This has had an impact on where animals live today, sometimes leaving close cousins in different parts of the world.

Changing Earth

Earth's outer layer, the crust, is split into tectonic plates, which move very slowly, carrying the land masses with them. Over billions of years, this slow movement has changed Earth's surface beyond recognition. This globe shows how Earth looked 300 million years ago, when the land was joined in two supercontinents called Gondwana and Laurasia.



North and South America more than 2.8 million years ago

Continental collision

Today, North and South America are joined by a narrow strip of land that formed 2.8 million years ago. Before this, animals on each continent were separated. When these two land masses collided, it created a passage for some animals to move across. Some animals from the north, including pumas, traveled south, and some from the south, such as armadillos, ventured north.



Separated by flooding

Earth has experienced many ice ages, when large parts of the globe were covered with ice. When temperatures increased, melting ice caused sea levels to rise. Lots of islands around the world, like Sumatra and Borneo in Indonesia, formed in this way. In the process, animals there separated and evolved into different species, including the graceful pitta in Sumatra and blue-banded pitta in Borneo.



The Sunda Shelf in Southeast Asia
about 20,000 years ago

Emerging islands

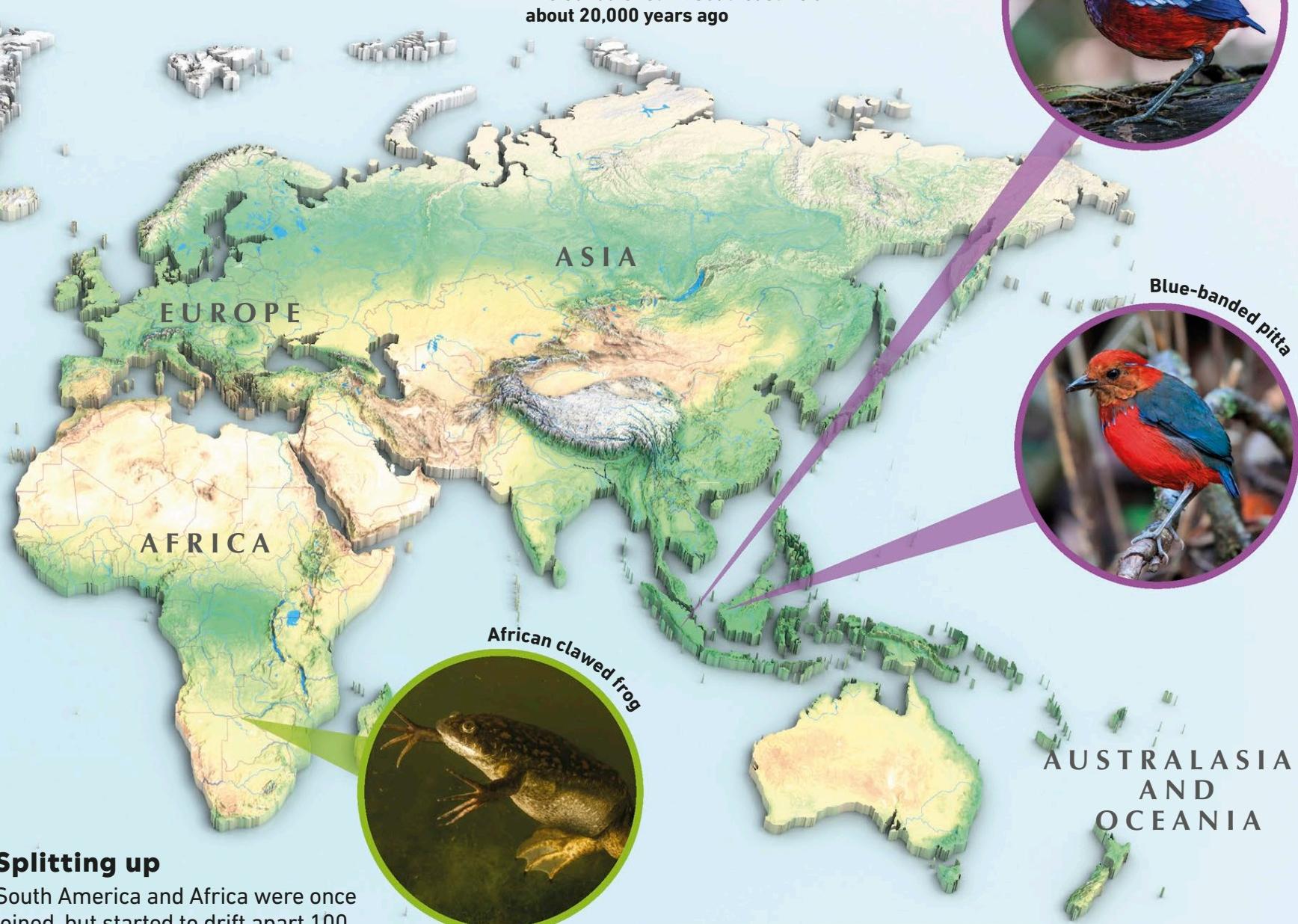
When sea levels were lower, Sumatra, Borneo, and neighboring islands were part of one land mass called the Sunda Shelf. With rising sea levels, much of the region became submerged (seen in a lighter color), leaving behind islands.



Graceful pitta

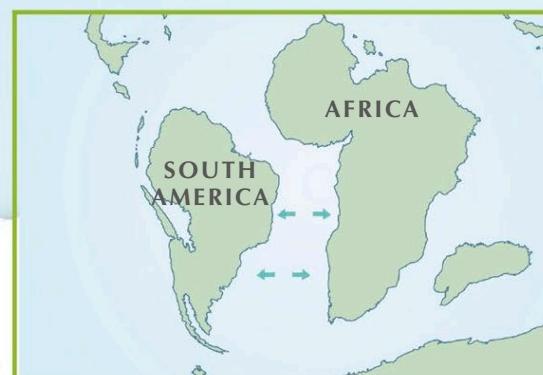


Blue-banded pitta



Splitting up

South America and Africa were once joined, but started to drift apart 100 million years ago, separating animals. This explains why some animals are related, even with the vast Atlantic between them. One example is the Pipidae amphibians, which include South American Suriname toads and African clawed frogs.



New ocean

The matching shapes of South America and Africa is a clue that they were once joined. Volcanic activity in this area caused tectonic plates to move, pushing apart these land masses.

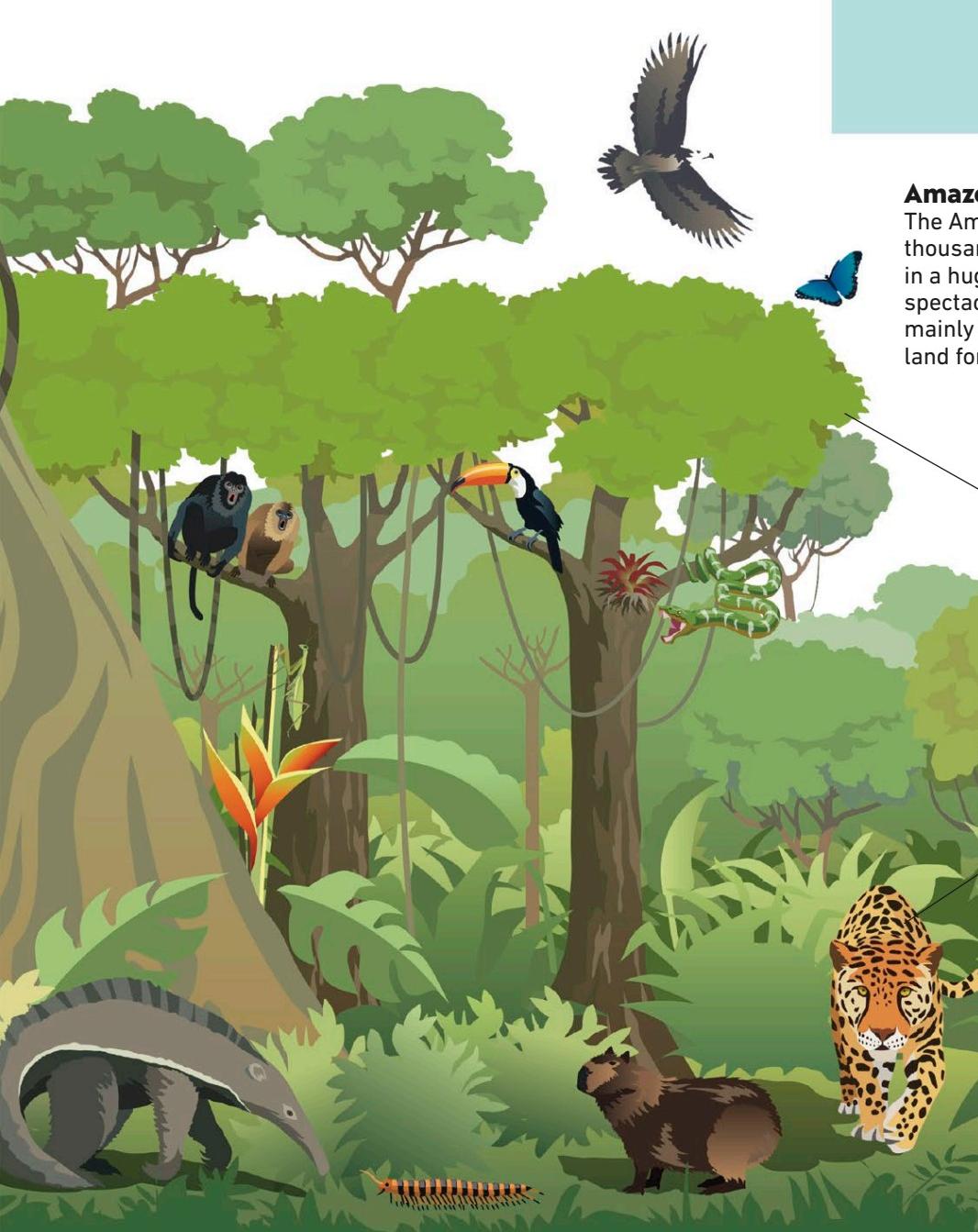
South America and Africa
about 95 million years ago

Under threat

All around the world, animals are in decline and many species are facing extinction. As the human population grows bigger—using more space, eating more food, and polluting the environment—it becomes harder for animals to survive.

Biodiversity hot spots

Some places on Earth are especially rich in plant and animal species. These biodiversity hot spots are highly vulnerable to threats such as deforestation and climate change because many of the species that live there are found nowhere else in the world. This map shows some of the world's most important hot spots, on land and in the sea.

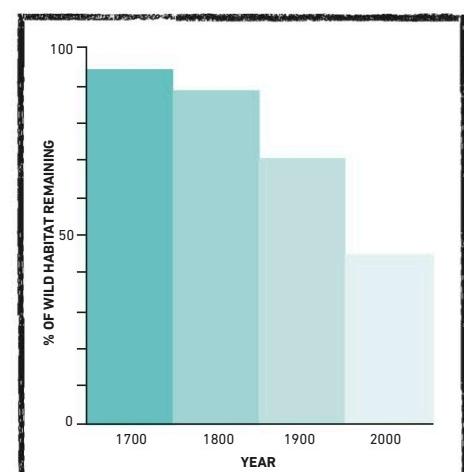


Amazon rainforest

The Amazon rainforest is a biodiversity hot spot containing thousands of species of insects, birds, and other animals, in a huge variety of different habitats. However, this spectacular South American region is under threat, mainly from the farming industry, which is clearing land for grazing cattle and to grow animal feed.

Rich habitat

The bright, airy canopy of the rainforest is so different from the dense vegetation growing underneath, they are like two separate habitats—with different species of animals living in each.



Many species

The Amazon rainforest is teeming with countless different creatures, from jaguars, anteaters, and colorful birds to tiny insects and not-so-tiny spiders. Many of the plant and animal species in this rich habitat rely on other species for things like food, shelter, and protection.

Declining wilderness

Since the Industrial Revolution, when humans started burning more fuel for energy and clearing habitats on a scale greater than ever before, wild animals have lost more than 50 percent of their living space. The wilderness has been converted to cities, farms, roads, and other developments.



Deforestation

Trees are felled to clear land for crops and livestock, or to develop buildings, dams, and open up mines. Their timber is also sold to make products, such as paper. An estimated 15 billion trees are cut down each year, resulting in the loss of forest habitats for animals and plants.



Climate change

Burning fossil fuels, such as coal, releases carbon dioxide and other greenhouse gases into the atmosphere. The increasing levels of these gases is causing the world to warm up, threatening habitats on land and in the oceans, including the vital polar ice habitat of penguins.



Building on the wilderness

When humans build towns, cities, and roads, they are carving up the wilderness to leave smaller and smaller patches of natural habitat. Some animals, such as predators that are high up in the food chain, need large areas in which to roam. They cannot survive in the isolated patches of habitat that remain.



Overfishing

Some fish are under threat because so many are taken out of the ocean that their numbers cannot recover. Other species are caught up in nets and discarded as unwanted bycatch. The sharks pictured here have been targeted for their fins, considered a delicacy in some countries.

Poaching

Many kinds of wild animals are hunted for their meat, or because their bodies supply something that is considered valuable. Elephants have long been targeted for their ivory tusks, and rhinoceroses for their horns. This is illegal but it still takes place, driving some species to the edge of extinction.



**AN AREA OF RAINFOREST
ALMOST THE SIZE OF
SWITZERLAND WAS
LOST DURING 2019 ALONE**

26% **OF MAMMALS
ARE THREATENED
BY EXTINCTION**

Melting ice

Climate change is heating up the Arctic quicker than anywhere else in the world. As sea ice melts, polar bears move onto land with limited access to seals, their primary food source. Without seals, polar bears are at real risk of starvation. If nothing is done, the global population of polar bears could halve to 10,000 by 2050.





Conservation

Despite the threats that animals face, habitats are being saved and species brought back from the edge of extinction. Conservation schemes safeguard wildlife, by protecting wild areas or breeding rare species.

Conservation in action

Today, national parks in Madagascar are helping protect the critically endangered greater bamboo lemur—one of the world's rarest primates. Reduced habitat destruction, daily monitoring, and local educational programs have been instituted to help save this rare species. This is just one example of how organizations all over the world have worked to save species since the 1960s.

Distinctive tufts

The greater bamboo lemur is recognizable by the white tufts around its ears.



Rainforest reliance
This species relies on rainforest where giant bamboo grows. The bamboo, which makes up 95 percent of its diet, is being lost in forest clearance.

IUCN Red List

A global body called the International Union for the Conservation of Nature (IUCN) keeps a Red List of Threatened Species. Each of the more than 120,000 species listed is assigned a threat level in order to figure out which ones need help most urgently.



Least concern

Unlikely to face extinction in the near future



Near threatened

Close to a threat of extinction in the near future



Vulnerable

Faces a high risk of extinction in the wild



Endangered

Faces a very high risk of extinction in the wild



Critically endangered

Faces an extremely high extinction risk in the wild



Extinct in the wild

Survives only in captivity or far outside its natural range



Extinct

Very likely that the last individual has died

Species saved

Conservationists have used different methods to protect species from threats and help them recover, including setting aside protected wild areas, stopping hunting, or taking animals into captivity so they can breed safely there. Many species that were once on the brink of extinction have been saved, and today the populations of many of those species are growing.



Blue whale

Once relentlessly hunted, the blue whale became one of the world's rarest species as its numbers plunged in the early 1900s. It is still endangered but, since a hunting ban in 1966, whale populations are now increasing.



Mauritius kestrel

In the 1970s, deforestation and introduced animals, such as mongooses and cats, meant that this island bird of prey was down to just four individuals—making it the world's rarest bird. They were taken into captivity for breeding, which has raised the population to hundreds.



Sea otter

The thick, protective fur of the sea otter made this animal a target for hunters: it was hunted until there were just a thousand or so individuals left. A hunting ban and better protection of the seas helped it recover.



Flying high

With a wingspan of 10 ft (3 m), the California condor soars to heights of up to 15,000 ft (4,600 m). It is the biggest flying bird in North America.

California condor

Hunting and lead poisoning helped drive North America's biggest bird of prey to extinction in the wild in 1978. But captive breeding increased numbers, and birds could be released back into protected areas.



A horse apart

Its stocky body, high mane, white nose, and shorter legs set the Przewalski's horse apart from domesticated horses.

Przewalski's horse

The world's only truly wild species of horse was hunted to extinction but survived in zoos, and today it is the focus of a captive breeding program. In the 1990s, some were released back into their wild habitat in Mongolia.

100,000 NATIONAL PARKS AND WILDLIFE RESERVES EXIST IN THE WORLD TODAY

12% OF EARTH'S LAND IS PROTECTED

Extinction in the wild

For some species in captivity, there is no true wild for them to return to. The last wild Père David's deer probably died in China more than 200 years ago, but some animals survived in a hunting park and were brought to England. The fenced herds alive today are all descended from these.







INVERTEBRATES

Invertebrate facts

Tiny animals without backbones first appeared more than 600 million years ago. These early invertebrates lived in water, and many still do. Today, the diversity of invertebrates found throughout the world is staggering, from squids and starfish to worms and spiders.

INVERTEBRATE TYPES

There are around 35 main groups of species in the animal kingdom. Just one of these groups, the vertebrates, contains all the fish, amphibians, reptiles, birds, and mammals. The other 34 groups are invertebrates—animals without an internal, jointed skeleton. Six of the main invertebrate groups are shown here.



Sponges

These primitive ocean organisms cannot move, and gather food by filtering it from the water.



Cnidarians

From jellyfish and anemones to corals, these sea creatures all have stinging tentacles to catch small prey.



Echinoderms

With their “spiny skin,” these marine animals include starfish, sea cucumbers, and sea urchins.



Mollusks

From slugs to squids, mollusks live in damp habitats or in the sea. Many have a hard shell.



Worms

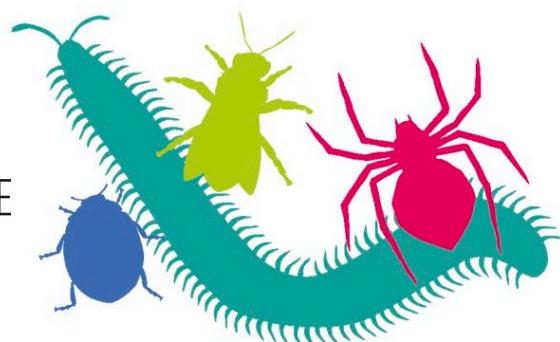
Found in water and on land, some—such as earthworms—are made up of many identical, soft-skinned segments.



Arthropods

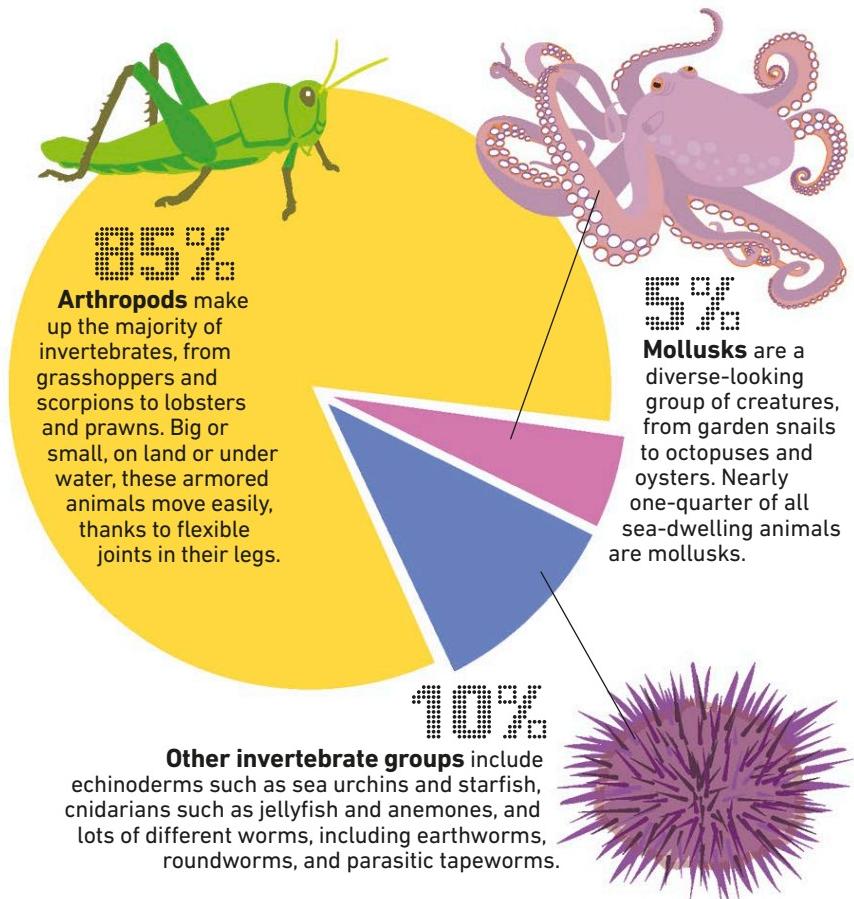
With their tough outer skeletons and jointed legs, arthropods include insects, spiders, and crabs.

ALMOST
97%
OF ALL ANIMALS ARE
INVERTEBRATES.



INVERTEBRATE NUMBERS

There are approximately 1.3 million known invertebrate species, but there could be many millions more. The vast majority of invertebrates belong to two groups: arthropods and mollusks.



EXTREME HABITATS

Some invertebrates can withstand—and even thrive—in incredibly hostile conditions, from barren, icy Antarctica to vast, unexplored regions thousands of feet below the ocean’s surface.



Antarctic midges are insects that measure only $\frac{1}{8}$ in (1 cm), yet are the largest native land animal in Antarctica. They live at temperatures of 5°F (-15°C), spending nine months of the year frozen solid.



Tube worms, a type of marine segmented worm, live on the Pacific Ocean seafloor near hydrothermal vents—volcanic areas where sections of Earth’s crust are moving apart. They grow up to 10 ft (3 m).

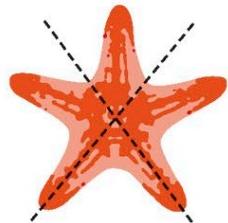
BODY SHAPES

Invertebrate body shapes fall into three main categories based on symmetry.



Bilateral symmetry

Many insects, from ladybugs to butterflies, have two halves that mirror each other.



Radial symmetry

Invertebrates such as starfish have several lines of symmetry around a central point.



No symmetry

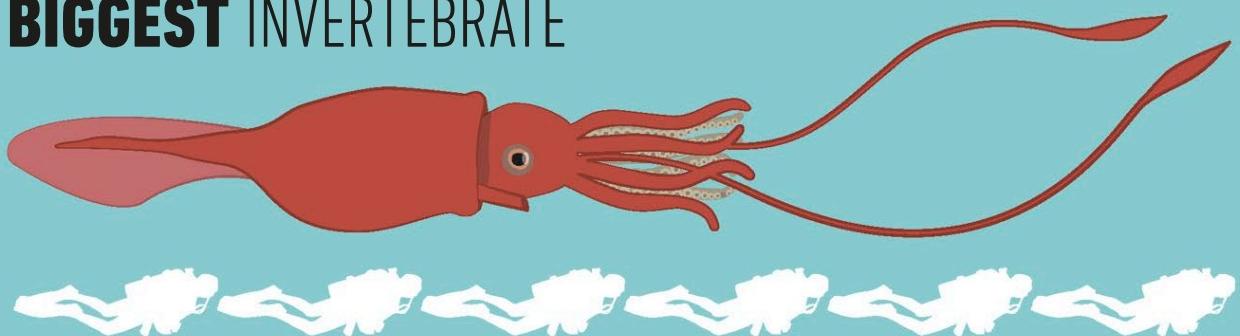
Invertebrates like sponges have no lines of symmetry. They have irregular body shapes.

SMART OCTOPUS

The coconut octopus uses tools, such as discarded coconuts or clam shells, to hide in while watching for prey such as crabs. Living on sandy bottoms in bays or lagoons in the western Pacific Ocean, this clever creature, which extends to about 6 in (15 cm), is also able to pick up and carry these tools more than 66 ft (20 m).



BIGGEST INVERTEBRATE



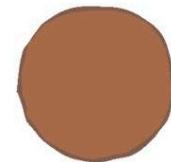
COLOSSAL SQUIDS LIVE IN THE SOUTHERN OCEAN, AND CAN REACH

40 FT (12 M) LONG.

SMALLEST INVERTEBRATE



Rotifer



Width of human hair

ROTIFERS ARE AMONG THE WORLD'S SMALLEST ANIMALS AT **0.001 IN** (0.05 MM) LONG.

FASTEST INSECT

The fastest insect relative to its body size is the tiger beetle. This $\frac{1}{2}$ in- (1.4 cm-) long animal covers 120 times its body length in just a single second.

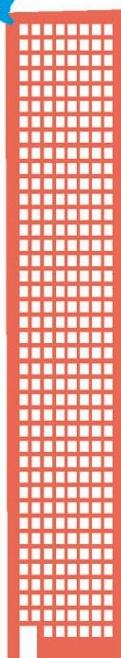


USAIN BOLT OLYMPIC SPRINTERS: 5 BODY LENGTHS IN ONE SECOND

HIGHEST JUMPER



THE TINY **FROG HOPPER** CAN LEAP MORE THAN **23 IN** (60 CM) IN THE AIR. THAT'S THE EQUIVALENT OF A **HUMAN JUMPING 630 FT** (190 M), OR A **40-STORY BUILDING!**



HIGH LIFE
THE MOUNT EVEREST JUMPING SPIDER LIVES UP TO 22,000 FT (6,700 M) ABOVE SEA LEVEL, ON THE SLOPES OF **MOUNT EVEREST**.

LONGEST MIGRATION

THE **GLOBE SKIMMER DRAGONFLY** MIGRATES **4,400 MILES** (7,080 KM) THROUGH THE AIR **WITHOUT LANDING**.



BIGGEST SWARM

The desert locust gathers in swarms of up to 8 billion. Living in parts of the Middle East, Asia, and Africa, they are known to destroy crops.



Giant Pacific octopus



Weighing as much as two grown men, the giant Pacific octopus is the largest of all octopus species, and one of the biggest ocean predators without a backbone. It is an agile, intelligent hunter, capable of catching prey as big as sharks.

Moves and tricks

Giant Pacific octopuses crawl or glide across the seabed, but for a quick getaway they push water from inside their body out through a funnel, to create jet propulsion. They do not have many predators, but if threatened they squirt out ink to confuse their attacker, as shown below.



Food chain trouble

The Sea of Okhotsk is rich in the food the giant octopus eats, such as fish, shellfish, and crabs. But as climate change causes ocean waters to warm up, the food sources on which the octopus depends are put at risk.

Sea of Okhotsk



ASIA

Bering Sea

ARCTIC OCEAN

In deeper waters
In summer, giant octopuses migrate into deeper, offshore waters to mate, sometimes reaching down to 4,900 ft (1,500 m). In fall, they return to the coast, where females lay their eggs.

Clever fishing

Giant octopuses in Japanese waters have been fitted with radio transmitters to follow their movements. Many have been found to follow commercial fishing nets to steal a meal.

KEY

Giant Pacific octopus range

Cold-water hunter

A big, speedy predator, the giant Pacific octopus thrives in the cold, oxygen-rich waters around the northern rim of the Pacific Ocean, mostly in seas that are rarely deeper than 1,640 ft (500 m). The octopus grabs prey with its arms, then uses its beak to inject venom into the prey. This immobilizes the prey and softens its flesh, which the octopus then can lick out with its rasping tongue.

Octopus nursery

Each female octopus lays up to 100,000 eggs in an underwater cave or crevice. She guards the eggs, which hang in clutches, until they hatch about six months later and she dies. The tiny hatchlings then spend about two months drifting among the ocean's plankton, before descending to the seabed, where they develop into adult shape and size.



NORTH AMERICA

CANADA

USA

Northern range

Furthest north, most giant octopuses live in shallower waters. Many live in coastal reefs and some may even drift into the intertidal zone by the shore.

Fleshy body

The thick, wrinkly skin of a giant Pacific octopus covers a soft, fleshy body that can squeeze through the smallest gaps. This is useful for catching prey hiding in crevices or escaping enemies on a rocky reef.

PACIFIC OCEAN

Accidental catch

In the rich fishing waters of the northeast Pacific, giant Pacific octopuses risk being caught in nets cast for cod and flatfish. It is the octopus species most commonly landed as a bycatch here.

Strong arms

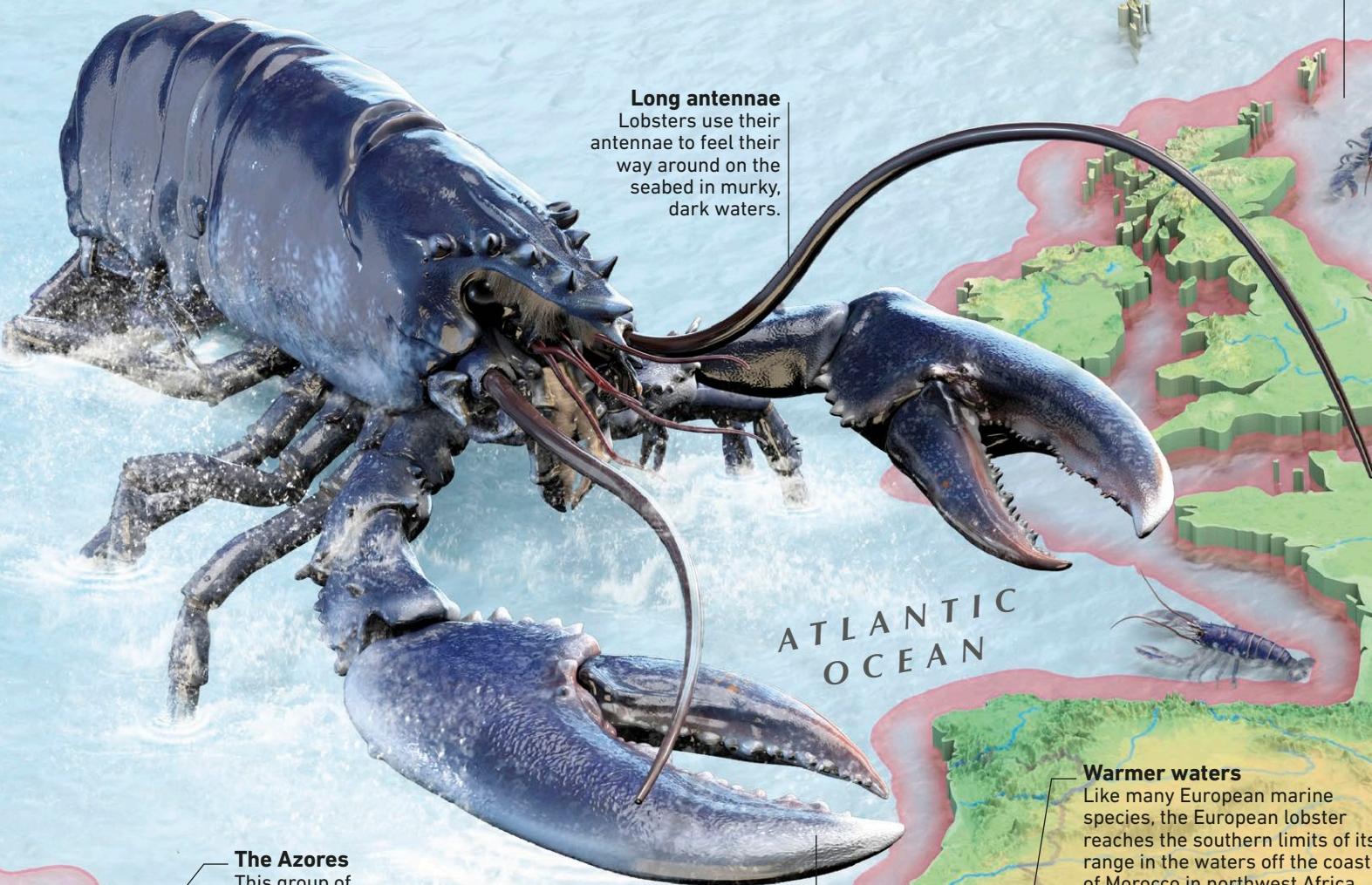
Octopuses have eight arms that carry two rows of large suckers for gripping prey. Each arm can have more than 500 suckers in total.

A GIANT PACIFIC OCTOPUS CAN WEIGH 400 LB (180 KG) AND ITS LONG ARMS CAN SPAN UP TO 20 FT (6 M)



European lobster

Lobsters are crustaceans, a group of invertebrates with armor-like, jointed exoskeletons protecting their soft bodies. One of the largest lobster species, the European lobster lives in shallow coastal seas across most of Europe and northern Africa.



Lobster movements
Most lobsters migrate into deeper waters to spawn, but one of the most spectacular migrations happens every fall off the coast of the United States, when huge numbers of spiny lobsters move in single file over the seabed to reach their spawning grounds.



North Sea

The North Sea is the biggest expanse of shallow continental waters in the northeast Atlantic. It is rich in lobsters' favorite food, such as crabs, starfish, and sea urchins.

North Sea



Warmer waters

Like many European marine species, the European lobster reaches the southern limits of its range in the waters off the coast of Morocco in northwest Africa. It cannot tolerate the warmer tropical seas further south.

KEY

■ European lobster range



FEMALE EUROPEAN LOBSTERS CAN LIVE UP TO THE AGE OF

70



OVERFISHING IN THE NORTH SEA HAS MADE LOBSTER NUMBERS THERE DROP BY

80%

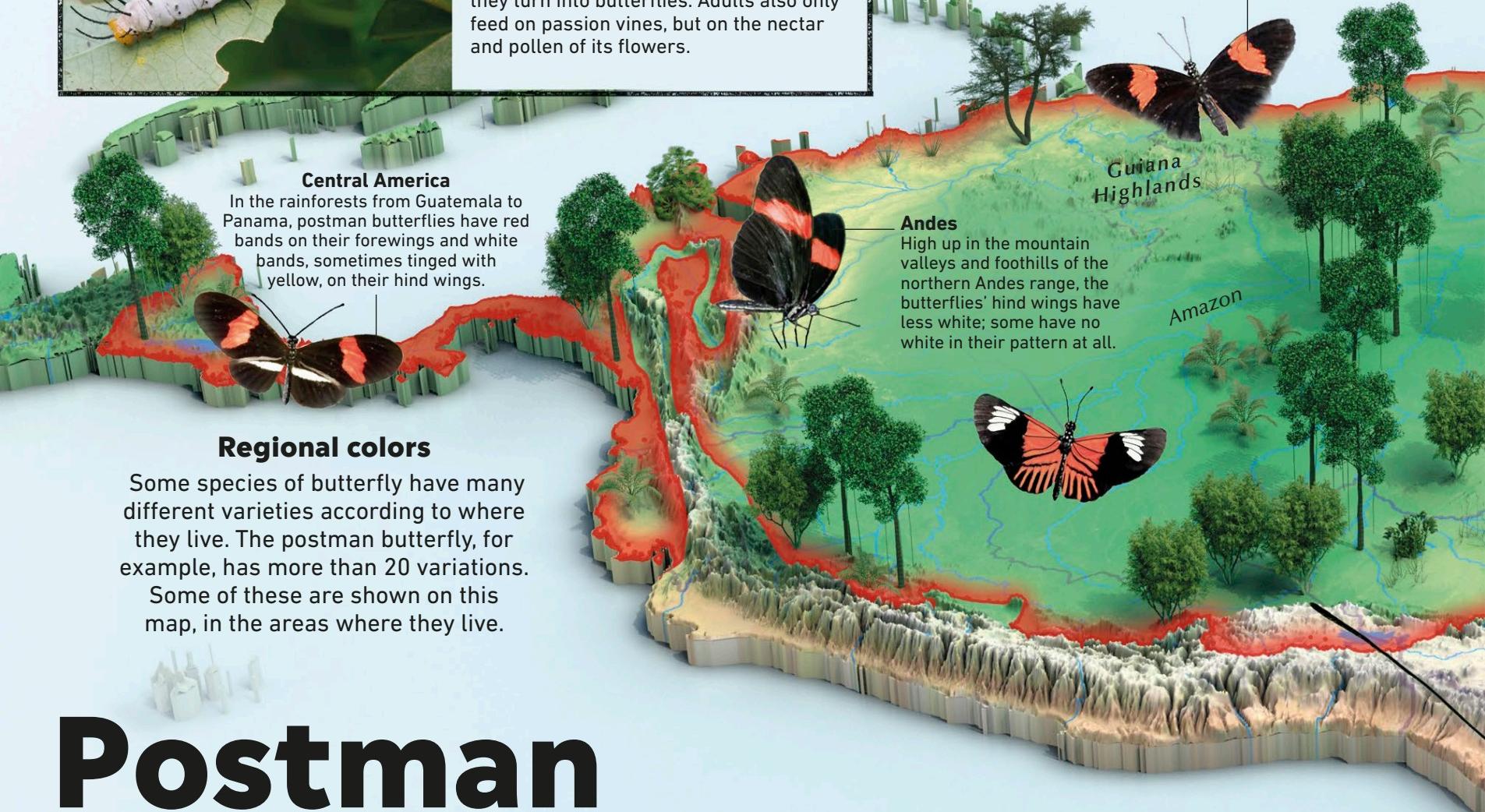


Caterpillar diet

Postman butterflies become poisonous very early in their life. Their caterpillars eat leaves of passion vines, which contain toxic cyanide. The poison stays in their bodies without harming them, even as they turn into butterflies. Adults also only feed on passion vines, but on the nectar and pollen of its flowers.

Guiana Highlands

In this area of tabletop mountains rising steeply from rainforests, the butterflies have little or no white in their color pattern—similar to those of the Andean mountains.



Postman butterfly

The postman butterfly lives in varied habitats from Central to South America. Across its range, its exact pattern of red, black, and white varies from place to place. A flash of color from any postman butterfly is a sign that it is poisonous, so helps keep predatory birds away.



THERE ARE ABOUT 20,000
SPECIES OF BUTTERFLY
IN THE WORLD



AT NIGHT, POSTMAN BUTTERFLIES
GATHER TO SLEEP IN GROUPS
KNOWN AS COMMUNAL ROOSTS

Amazon Basin

Across the lowlands of the great Amazon River Basin, local postman butterflies often live along rivers and streams. Here, they have white patches on their forewings, sometimes broken into spots.

Wings at rest

Like most day-flying butterflies, postman butterflies rest with their wings raised so their tips almost touch. Flapping their wings helps spread a scent that deters predators.

**Master mimics**

Closely related to the postman butterfly, the red postman (above) is a separate species, but matches the local color pattern of the postman wherever it lives alongside it. As they are both poisonous, this mimicry reinforces the warning for potential predators and helps both species survive.

KEY

Postman butterfly range

Wetlands

In Brazil's Pantanal wetlands, the postman lives near water. Here it has white stripes on the hindwings, looking more like those along Brazil's southwest coast and in Central America.

Sucking nectar

Butterflies have a flexible tube called a proboscis for drinking liquid nectar from flowers. Usually kept coiled up, it unrolls when the butterfly is ready to feed.

Passion flower







Plant pollinator

Bees are essential for keeping our planet green. They transfer pollen from flower to flower, pollinating many crops that we depend on for food. This mining bee is busy harvesting pollen from an apple blossom tree in Wisconsin. But climate change is affecting bee behavior, and intensive farming and pesticides are destroying bee habitats, such as wildflower meadows, trees, and hedgerows.

THE OLDEST
MEXICAN
RED-KNEED
TARANTULA
IS KNOWN
TO HAVE
LIVED FOR

28
YEARS



GOLIATH
TARANTULA
FANGS CAN
GROW UP TO

1 1/2 IN
(3.8 CM)

Western desert tarantula
One of the largest spiders in North America, this desert species from Arizona and Mexico survives heat and drought by burrowing underground.

Mexican red-kneed tarantula

Found in tropical hill forests, this species burrows into banks and around tree roots. A popular pet, it is now threatened by illegal trade.

Chaco golden-kneed tarantula

The Chaco is an area of extensive grassland in South America, south of the Amazon, and the golden-kneed is one of many tarantula species that thrive in this habitat.

Mighty spiders

Tarantulas grow bigger and live longer than other spiders. In most parts of the tropics they are high in the food chain. But their numbers are small wherever they live, making them vulnerable to habitat destruction.

Goliath tarantula

The biggest tarantula—and heaviest spider of them all—lives in the rainforests of the Amazon basin. It has a leg span of 12 in (30 cm).

Blue-footed baboon spider

Baboon spiders are ground-living tarantulas found in Africa. They get their name from their wide-tipped legs, which are said to resemble the fingers of a baboon.

Venomous fangs

Spiders use their fangs to inject venom that disables their prey. Tarantula venom can be deadly to small creatures, but is usually no more serious to a human than a bee sting.

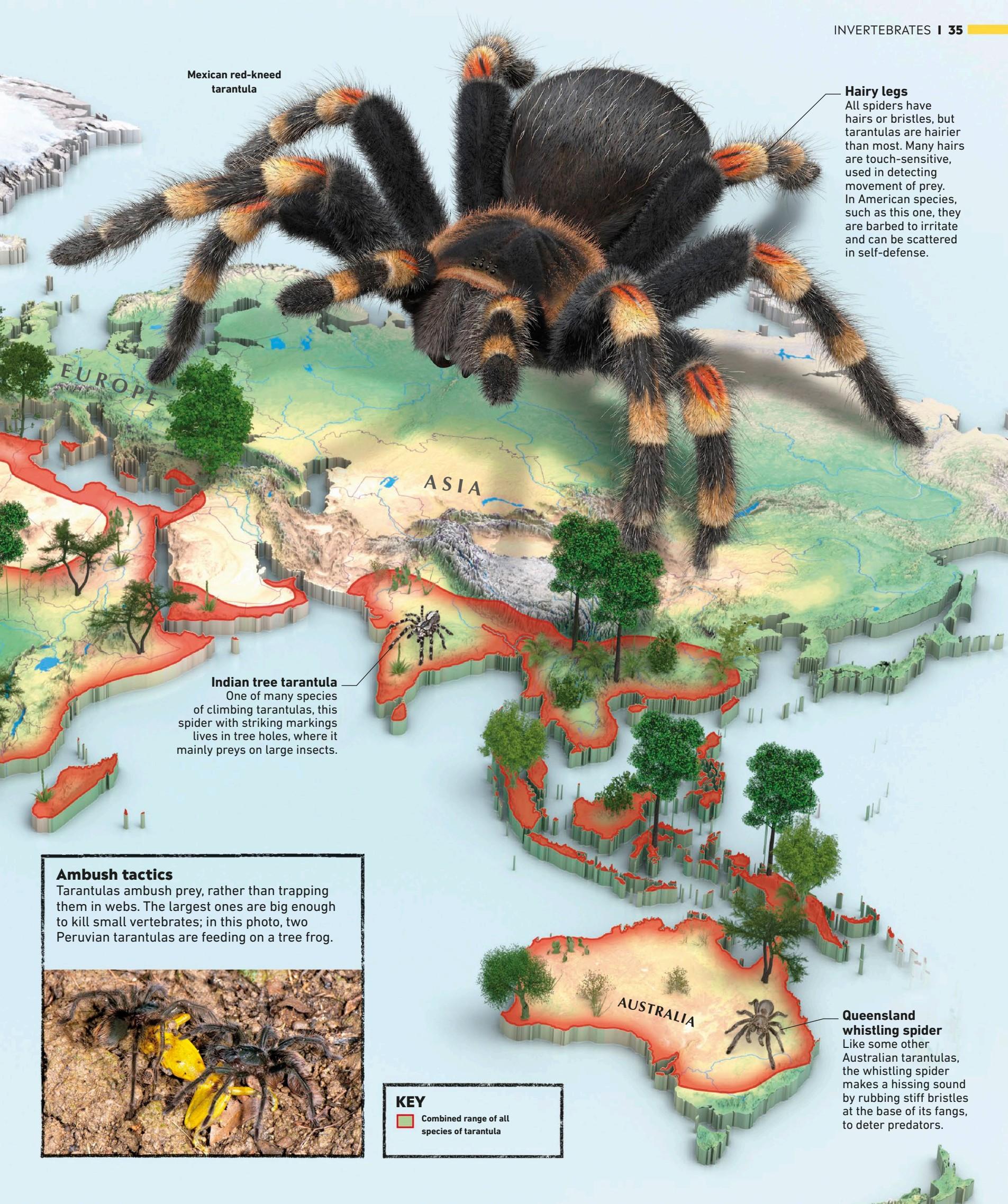


Tarantulas

Many big spiders are called “tarantulas,” but all true tarantulas have fat hairy bodies and belong to a family called the theraphosids. Found in all warm parts of the world, there are nearly 1,000 species: the smallest is no bigger than your thumb, but the biggest can span a large dinner plate with its legs.

Mexican red-kneed tarantula

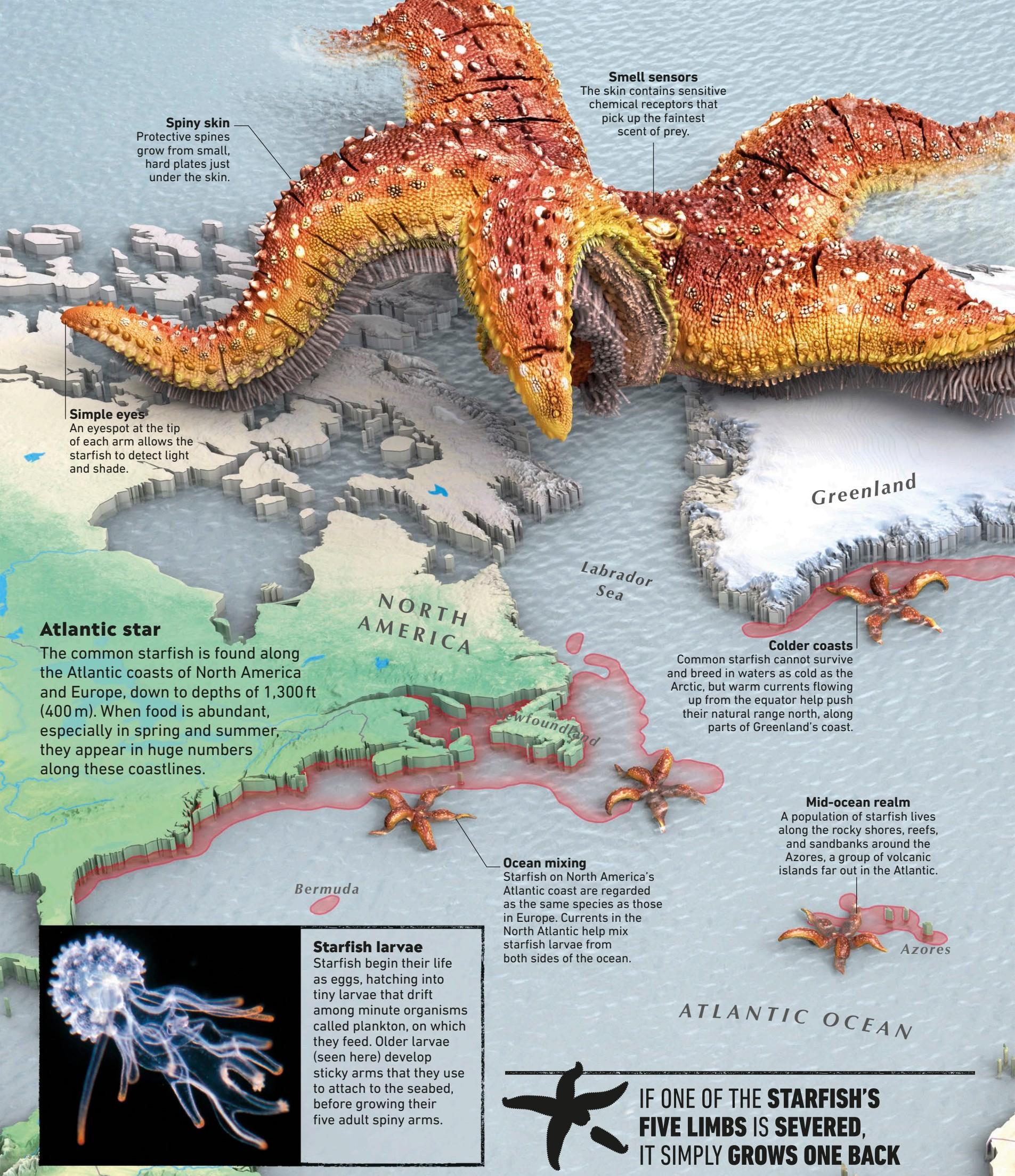
Hairy legs
All spiders have hairs or bristles, but tarantulas are hairier than most. Many hairs are touch-sensitive, used in detecting movement of prey. In American species, such as this one, they are barbed to irritate and can be scattered in self-defense.



Indian tree tarantula
One of many species of climbing tarantulas, this spider with striking markings lives in tree holes, where it mainly preys on large insects.



Queensland whistling spider
Like some other Australian tarantulas, the whistling spider makes a hissing sound by rubbing stiff bristles at the base of its fangs, to deter predators.



Common starfish

Along with sea cucumbers and urchins, the common starfish belongs to a group of animals called echinoderms, which live only in the ocean. Like many marine animals commonly spotted on or near the seashore, the starfish actually spends most of its life in deeper waters, as it needs to be underwater to spawn.







FISH

Fish facts

Fish evolved more than 500 million years ago, and were the first animals to evolve a backbone. They can be found in a variety of places, from vast oceans to small freshwater lakes. Some fish live on bright coral reefs, while others lurk thousands of feet deeper in pitch-black oceanic trenches.

WHAT IS A FISH?



Vertebrates

The typical fish skeleton consists of a spinal column, skull, ribs, and fin supports.



Cold-blooded

Fish may swim in warm or cold water, but their bodies are the same temperature as the water they live in.



Breathe with gills

Gills located on the side of a fish contain blood that absorbs oxygen from the water.



Scaly skin

Most fish are covered in protective, overlapping plates called scales. Some fish do not have scales.



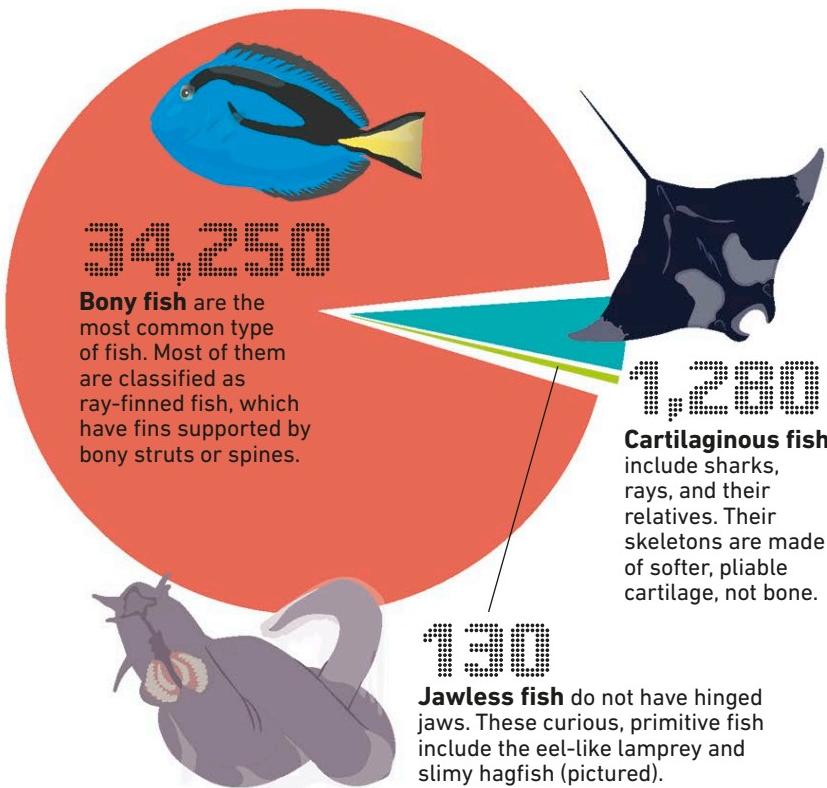
Live in water

Some fish swim in salty oceans, others need fresh water to survive. Some move between the two.

FISH TYPES

ESTIMATED NUMBER OF FISH SPECIES:

35,660



EXTREME HABITATS



Arctic cod can survive in sub-zero temperatures, using an antifreeze protein in their blood. This allows them to find food beneath the ice in polar regions, without any competition.

Some fish have evolved to survive in the most inhospitable conditions, from the frozen Arctic to dried-up riverbeds.



Mudskippers are found in the Indian and Pacific oceans, but they actually prefer the land—and even climb trees! They can keep breathing on land for up to two days at a time.



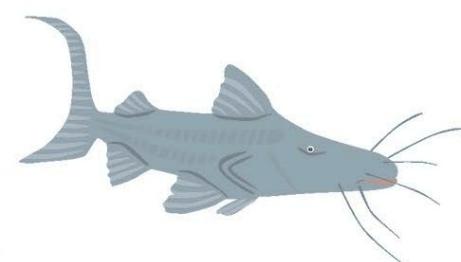
Lungfish live in rivers and lakes in Africa, Australia, and South America. During dry seasons, they burrow into mud, before cocooning themselves in a mucus that traps life-saving moisture.

LONGEST MIGRATION

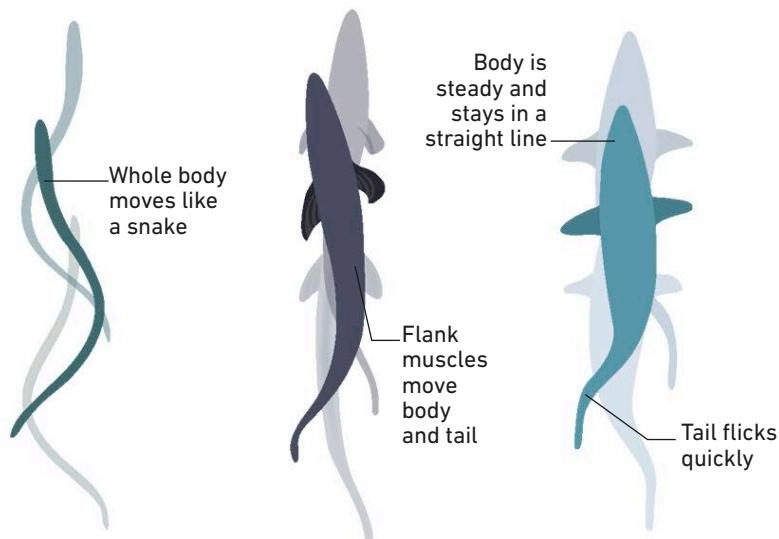
DORADO CATFISH MIGRATE

7,200 MILES

(11,600 KM) INLAND, FROM THE ANDES TO THE AMAZON AND BACK.



SWIMMING LIKE A FISH



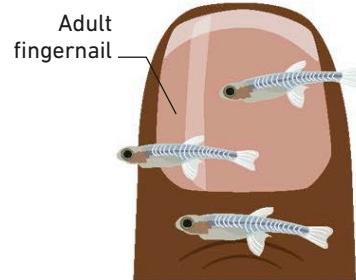
Side to side
Long, thin fish, such as eels, propel themselves using a series of fast S-shaped movements through the water.

Body and tail
Many fish, including salmon, swim with the help of their body and tail, using their powerful flank muscles to move forward.

Strong tail
The fastest fish, from tuna to sharks, maintain a straight, streamlined body, while their flank muscles flick their tail from side to side.

SMALLEST FISH

PAEDOCYPRIS PROGENETICA
IS THE SMALLEST-KNOWN FISH, WITH FEMALES MEASURING JUST $5\frac{1}{16}$ IN (7.9 mm).



ENDEMIC SPECIES

Some fish are native to a specific habitat and do not stray from there—they are endemic to that region. This is because these fish have evolved to adapt in that area only, and they cannot survive for long anywhere else.



Coelacanths were thought to be extinct for 65 million years, but in 1938 scientists discovered them off the coast of southeastern Africa. Since then, an Indonesian coelacanth has also been found.



Elephantnose fish are a curious-looking freshwater species native to western and central Africa. They are found in slow-moving rivers and muddy pools.

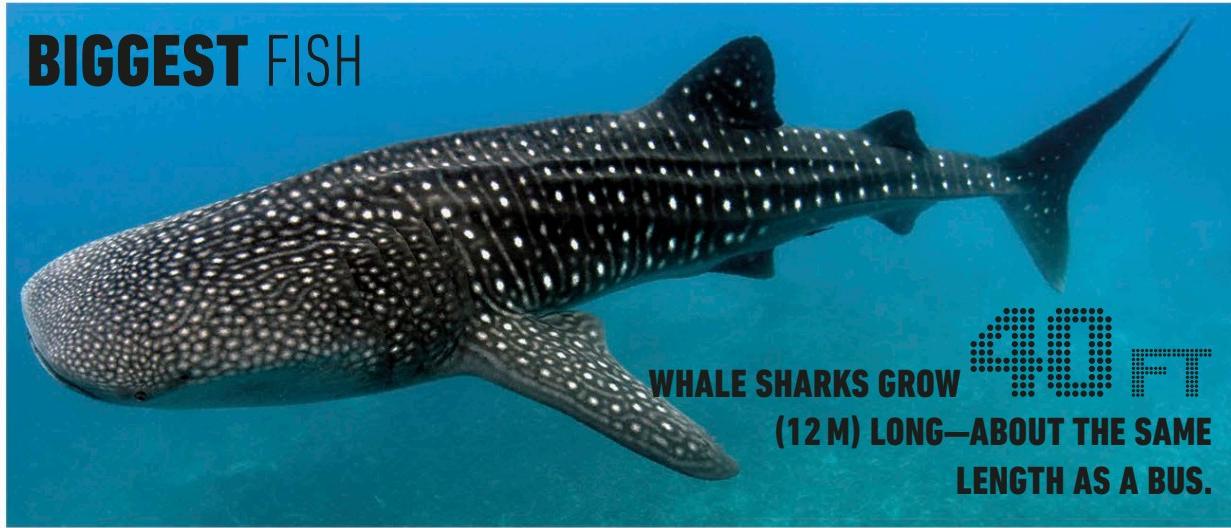
DEEPEST FISH

At the bottom of the Pacific Ocean is the Mariana Trench, the deepest oceanic trench in the world. Incredibly, some fish survive in this cold, dark, and lonely place, including the Mariana snailfish—a pink, slimy species that looks like an oversize tadpole.

MARIANA SNAILFISH
CAN REACH DEPTHS OF
23,000 FT
(7,010 M)



BIGGEST FISH



FAIREST FISH

Named for their spectacular dorsal fin, sailfish would easily win a race against the fastest human swimmer. They live in the warm Atlantic and Indo-Pacific waters.

MICHAEL PHELPS OLYMPIC SWIMMER AT 4.7 MPH (7.6 KPH)

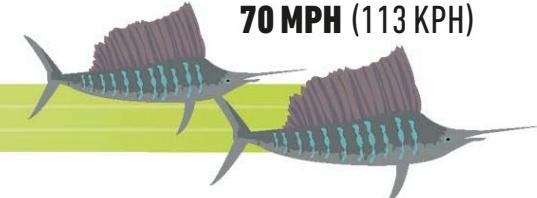


SMART FISH

Found in the Indian and Pacific oceans, the reef-dwelling tuskfish can use a rock to smash open shellfish, making it the first wild fish observed using tools.



SAILFISH AT 70 MPH (113 KPH)



Sea lamprey

The sea lamprey is a jawless fish—instead of jaws it has a sucker filled with teeth, which it uses to feed on the blood of other fishes. It grows up as a larva in the rivers and lakes of North America and Europe, then lives its adult life in the salty North Atlantic Ocean, before returning to freshwater habitats to breed and die.



Lamprey larvae

Sea lamprey eggs hatch into young called larvae. The larvae burrow into gravel on the riverbed, leaving their heads exposed. They filter feed on tiny particles swept into their mouth by tiny microscopic hairs called cilia. This larval phase can last for up to three years.

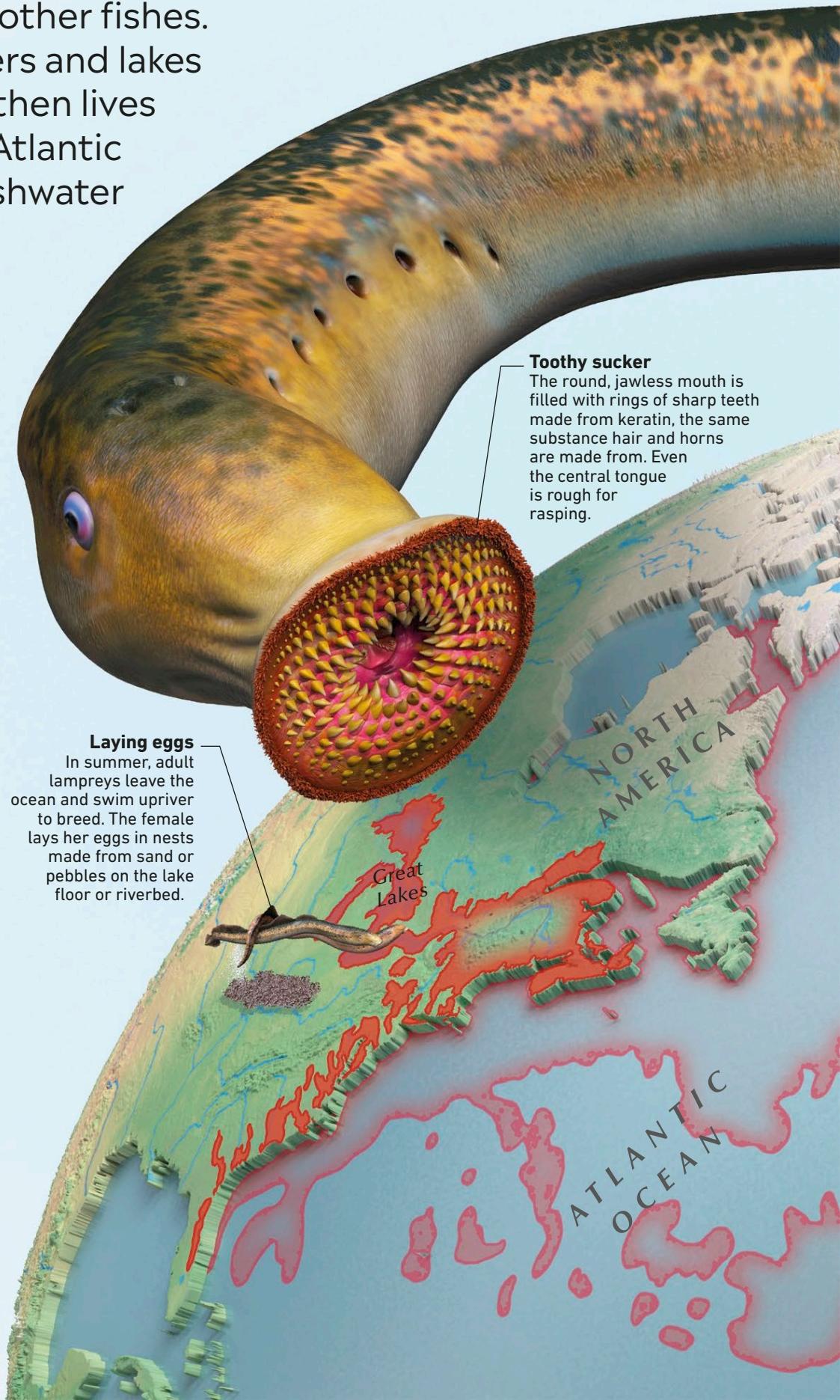


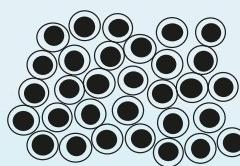
Feeding on blood

Adult lampreys clamp onto other fish with their sucker-like mouths to feed. They use their horny teeth and tongue to cut a hole in the prey's skin, swallowing its blood as food. The lamprey's saliva stops the blood clotting so it keeps flowing, often until the victim dies.

Northern waters

Sea lampreys can be found all across the North Atlantic, from the frigid waters of Greenland to the balmy latitudes of Spain and Florida, USA. While most adults live in the ocean, some make the Great Lakes of North America their home all year round.





ONE SPAWNING FEMALE SEA LAMPREY MAY LAY UP TO 300,000 EGGS

THE LENGTH OF A SEA LAMPREY CAN BE UP TO

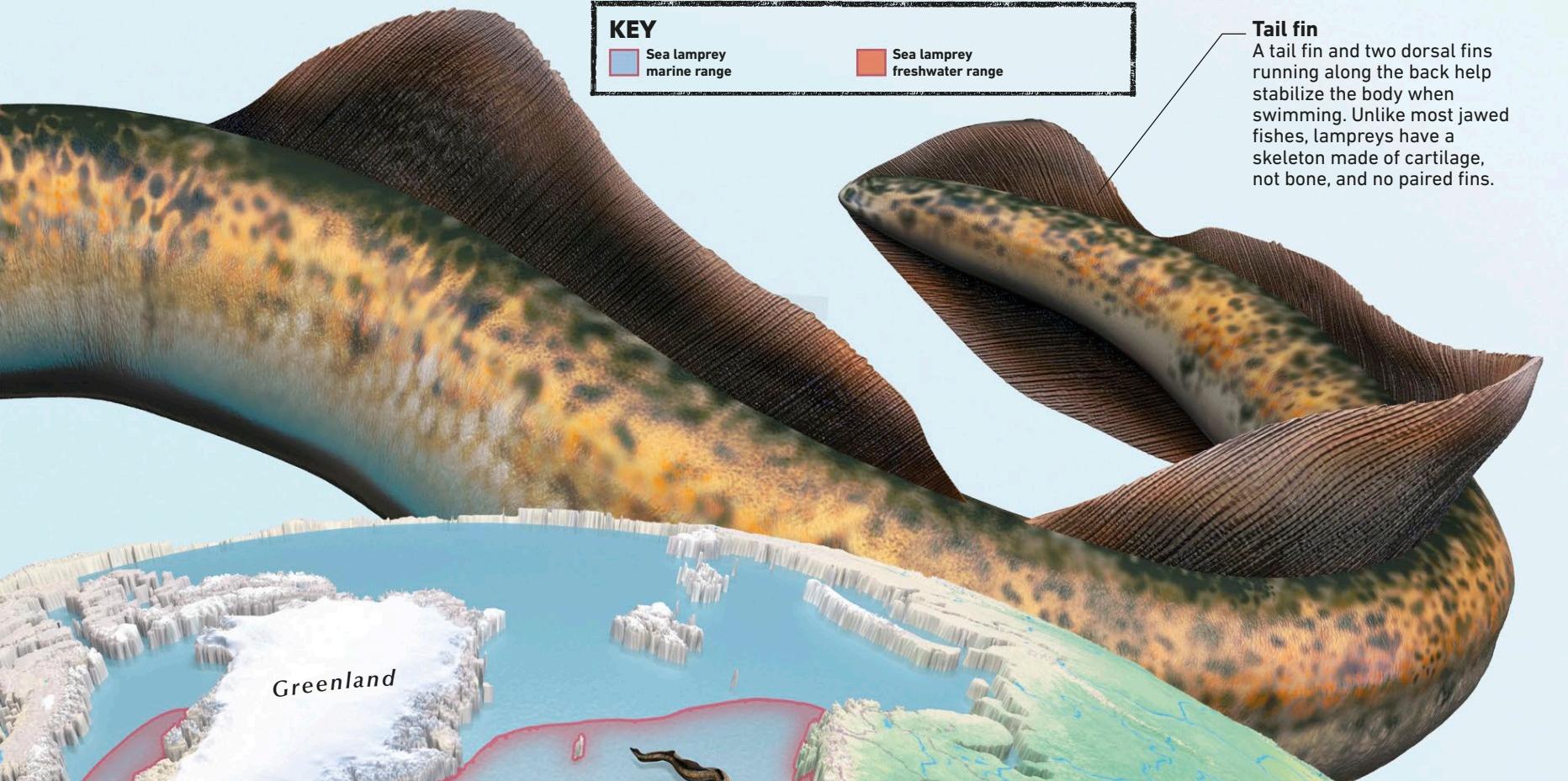
4 FT (1.2 M)

KEY

Sea lamprey marine range	Sea lamprey freshwater range
--------------------------	------------------------------

Tail fin

A tail fin and two dorsal fins running along the back help stabilize the body when swimming. Unlike most jawed fishes, lampreys have a skeleton made of cartilage, not bone, and no paired fins.



Greenland

Feeding at sea

Most mature adult sea lampreys feed at sea, where they consume the blood of other fishes, such as cod and herring, or even marine mammals, such as dolphins.



Long-distance swimmers

Sea lampreys can travel long distances into the open ocean in search of food, and may descend to depths of 2½ miles (4 km).



Baltic Sea

North Sea

Freshwater larvae

The larvae of sea lampreys spend their time in freshwater rivers and lakes. When they reach maturity they swim down river and out toward the open ocean.

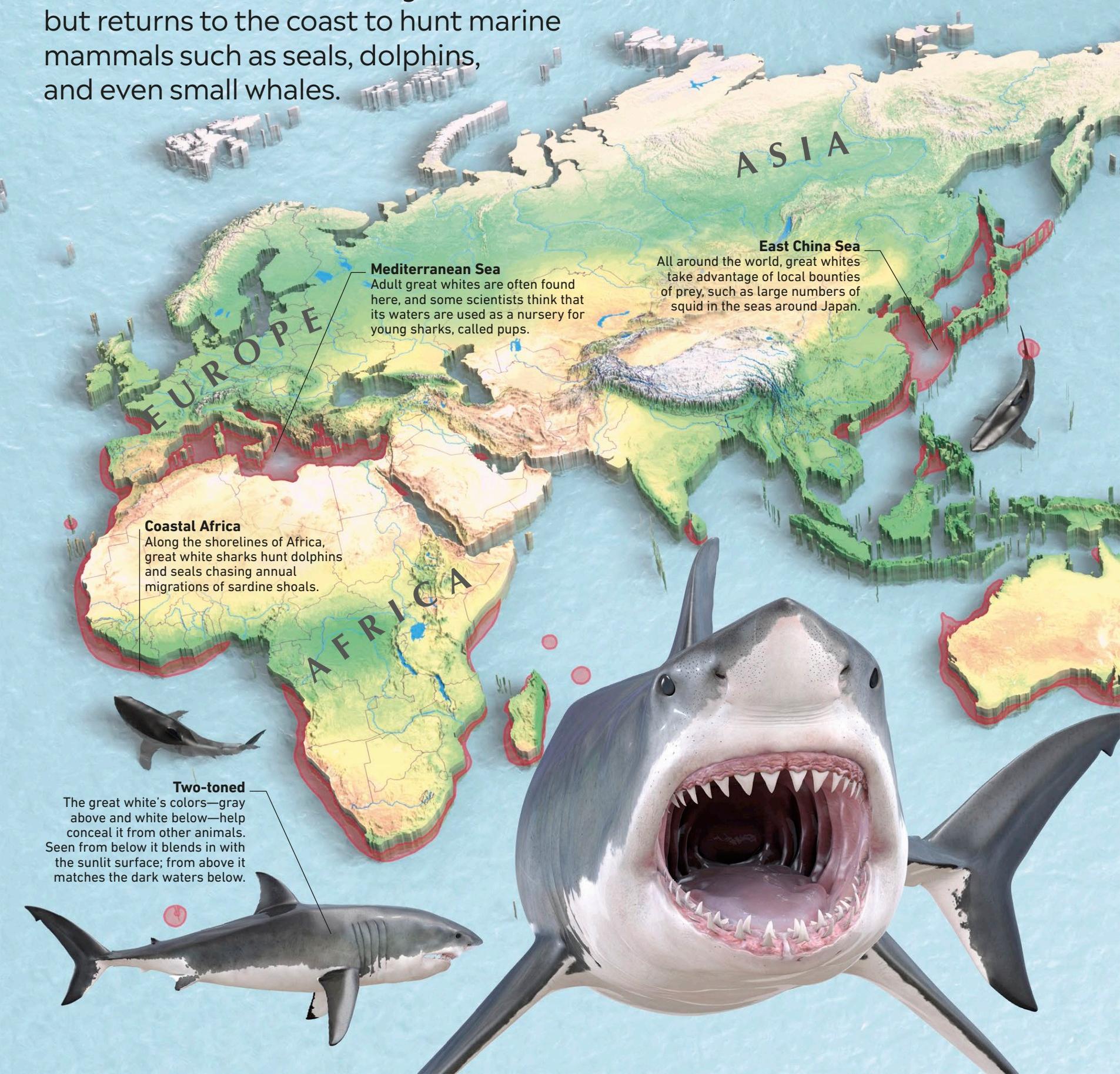
EUROPE

Mediterranean Sea

Mediterranean lampreys
Lampreys in the Mediterranean Sea spawn in the rivers of southern Europe.

Great white shark

Armed with razor-sharp teeth and a sleek body shaped like a torpedo, the great white shark is a fast, formidable predator. This wanderer roams throughout the world's oceans, but returns to the coast to hunt marine mammals such as seals, dolphins, and even small whales.



ANIMALS IN DANGER

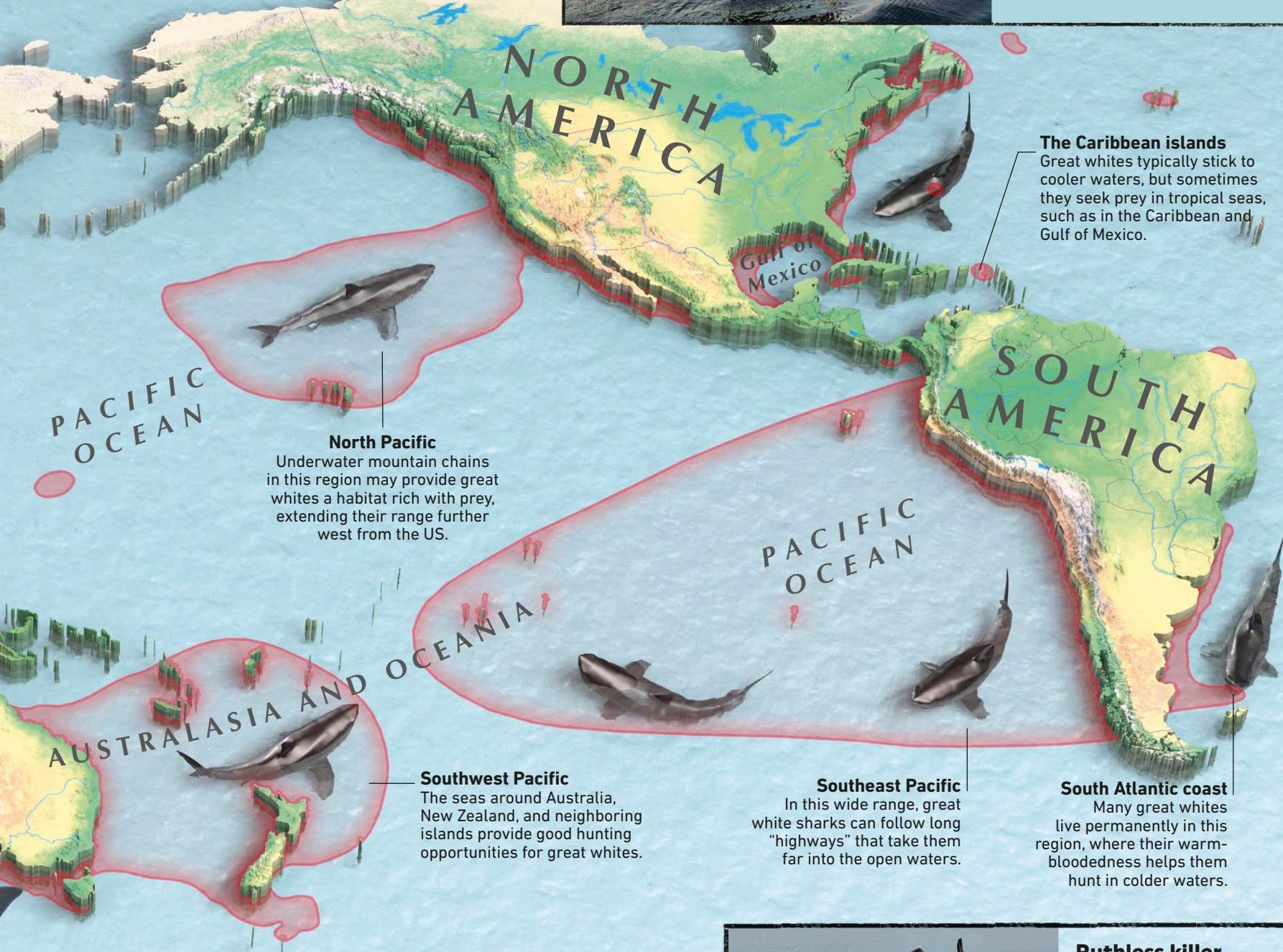
Great white shark
 IUCN status: vulnerable
 Population estimate: unknown

KEY

Great white shark range

**Tracking sharks**

Little is known about the exact movements of great whites, but they can be followed by fitting them with tracking devices. These transmit signals to satellites, which send information back to Earth about the animal's location. Such studies show they travel thousands of miles across the oceans.

**Long-distance wanderer**

The great white shark is the world's widest-ranging fish and can be found in most oceans, but is found most often in the ranges shown on this map. Unusually for a fish, it maintains a high body temperature, helping it survive in colder waters and chase down warm-blooded mammals.



A GREAT WHITE SHARK CAN HAVE UP TO 300 TEETH

**Ruthless killer**

Once a great white shark sights a target near the water's surface, it moves in quickly for the kill. It attacks its prey, such as this sea lion, with a single ferocious bite—and in the process can breach the surface in spectacular fashion. It then lets the victim bleed to death before starting to feed.

Shallow waters

In the sunlit waters of the Maldives in the Indian Ocean, blacktip reef sharks are rounding up their prey. Forcing the fish into ever denser shoals, they nudge them into shallow water close to the shore before moving in to take a bite. These agile hunters are found in all shallow tropical seas, particularly around coral reefs and lagoons.





Slimy blanket

While it sleeps, a steephead parrotfish produces slime from its skin to build up a cocoon around it. This shield takes around an hour to make, and protects the fish from predators and also serves as a barrier to infectious parasites.



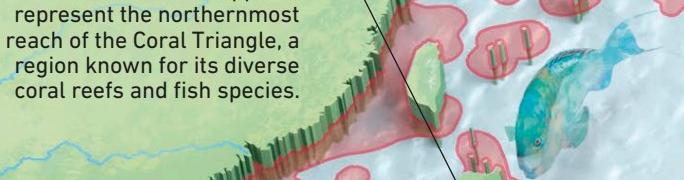
Diversity hot spot

The stunning coral reefs between the Philippines and Papua New Guinea have the highest diversity of marine animals in the world. Known as the Coral Triangle, this region covers $2\frac{1}{4}$ million sq miles (6 million sq km) and is also home to 75 percent of all coral species.



The Philippines

The warm, shallow waters around the Philippines represent the northernmost reach of the Coral Triangle, a region known for its diverse coral reefs and fish species.



White-sand islands

Many tiny islands in the western Pacific are surrounded by white beaches made of sand produced by the poop of thousands of coral-eating parrotfish.

Papua New Guinea
Islands off the coast of this country have some of the richest reefs anywhere on Earth.

A U S T R A L A S I A

S O L O M O N I S L A N D S

**PARROT FISH
HAVE A SET
OF TEETH
IN THEIR
THROAT TO
GRIND DOWN
ROCKY CORAL**

Northwest Australia

Coral reefs on the narrow continental shelf around this region extend the range of Indo-Pacific fish, such as the steephead parrotfish, into the fringes of the Indian Ocean.

**I N D I A N
O C E A N**

Indo-Pacific beauty

The steephead parrotfish is scattered throughout parts of the Indian Ocean to the Pacific islands of Polynesia. This species' showy colors help them recognize their own kind in crowded, reef-dwelling communities. It also uses its beak to break the rocky coral, digesting its softer flesh and pooping the rocky parts as white sand.

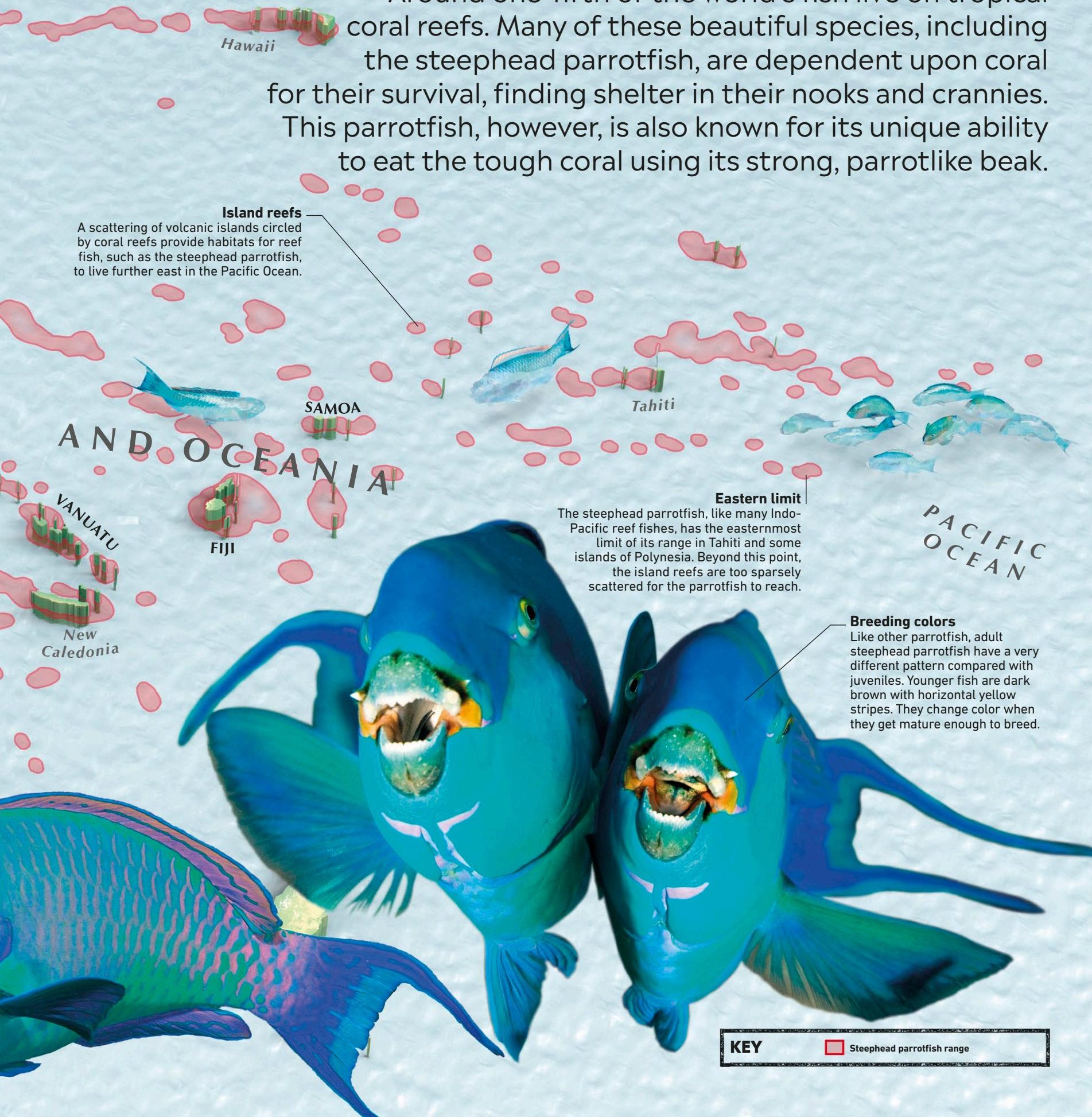
Head hump

Only males of the steephead parrotfish develop a head hump, but all youngsters have the potential to do so. This is because younger females can change their sex and turn into males.

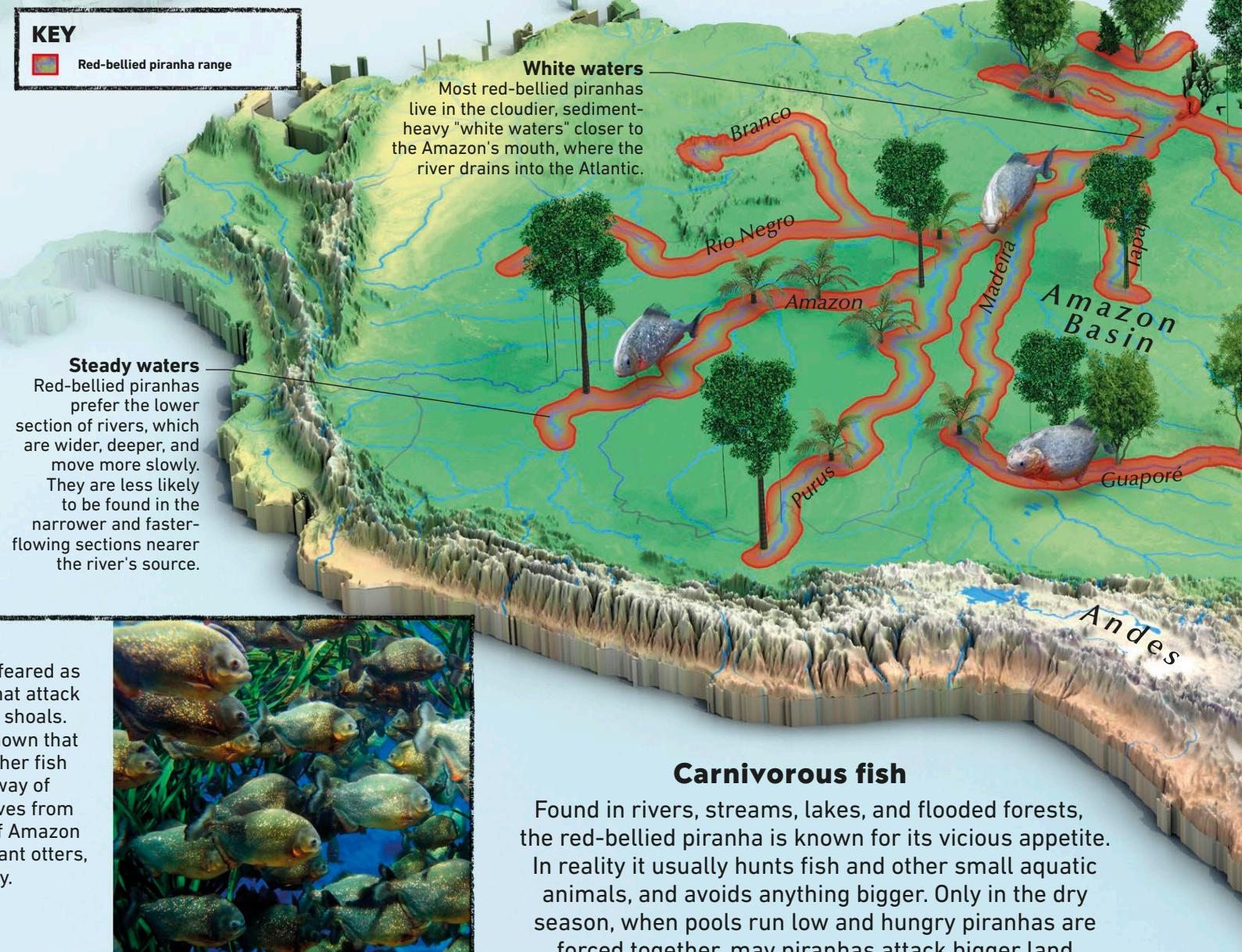


Steephead parrotfish

Around one-fifth of the world's fish live on tropical coral reefs. Many of these beautiful species, including the steephead parrotfish, are dependent upon coral for their survival, finding shelter in their nooks and crannies. This parrotfish, however, is also known for its unique ability to eat the tough coral using its strong, parrotlike beak.

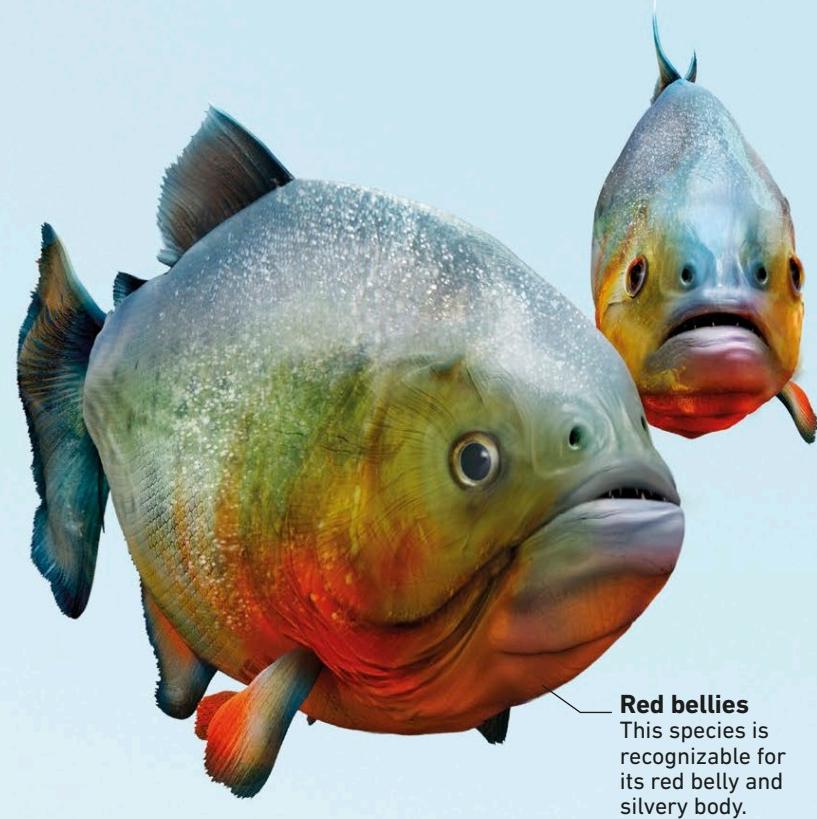


RED-BELLIED PIRANHAS "BARK" TO WARN OFF OTHER FISH

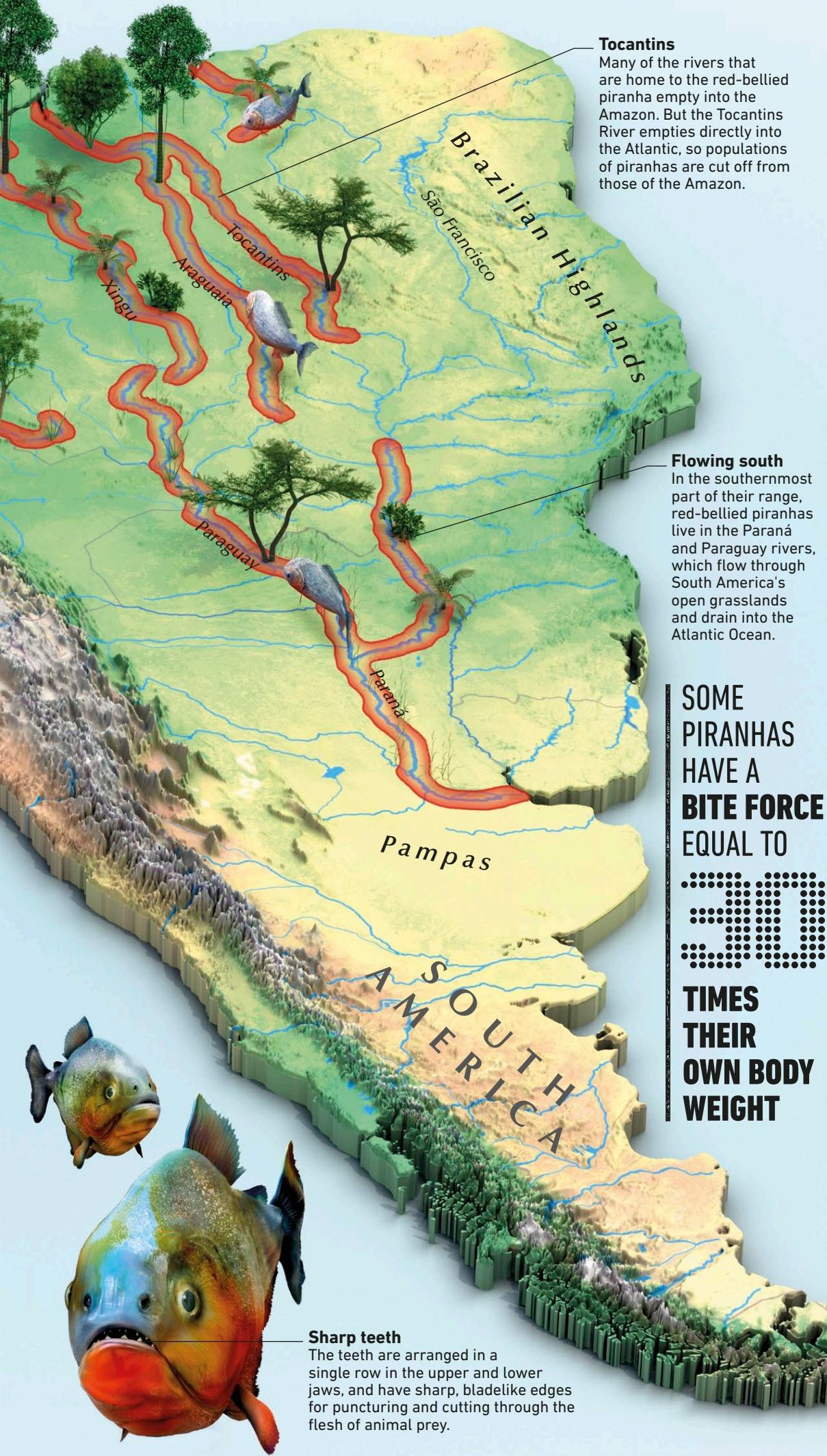


Red-bellied piranha

The rivers running through the Amazon Basin in northern South America are home to the biggest diversity of freshwater fish in the world, including 38 species of piranha. Among them is the red-bellied piranha—a fish with a fearsome reputation.



PIRANHA RELATIVES



**SOME
PIRANHAS
HAVE A
BITE FORCE
EQUAL TO
•••
300
•••
TIMES
THEIR
OWN BODY
WEIGHT**



Pacu

A giant relative of the piranhas, the pacu has strong jaws for cracking seeds and nuts that fall into the waters when the Amazon is flooded during the rainy season.



Neon tetra

Tetras are tiny relatives of the piranhas that eat small invertebrates. Many, such as the neon tetra, are brightly colored—making them popular in aquariums.



Freshwater hatchetfish

Small piranha relatives called hatchetfishes swim near the surface and prey on insects. Their muscular bodies help them jump from the water to escape danger.



African tiger fish

Close cousins of the piranhas live across the Atlantic in African rivers. Some, such as the African tiger fish, are also sharp-toothed meat-eaters.



Congo tetra

The brightly colored Congo tetra lives in Africa. These ancestors of piranha relatives first evolved when South America and Africa were joined.





AMPHIBIANS



Amphibian facts

The first amphibians evolved from fish and moved on to land more than 300 million years ago. Today, most amphibians move between land and water. They are found throughout the world, and most commonly in moist, freshwater habitats like woodlands and rainforests.

WHAT IS AN AMPHIBIAN?



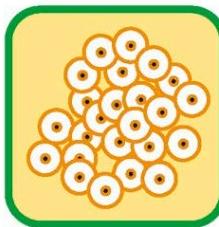
Vertebrates
Like their fish ancestors, all amphibians have an internal skeleton made of bone.



Cold-blooded
The body temperature of amphibians fluctuates with that of the air and water around them.



Lay eggs
Most amphibians lay soft eggs, but some give birth to live young.



Aquatic young
The young hatch and stay for a time as tadpoles in water, eventually turning into amphibious adults.



Moist skin
Water passes through an amphibian's thin, moist skin, allowing it to breathe under water.

AMPHIBIAN TYPES

ESTIMATED NUMBER OF AMPHIBIAN SPECIES:

8,250

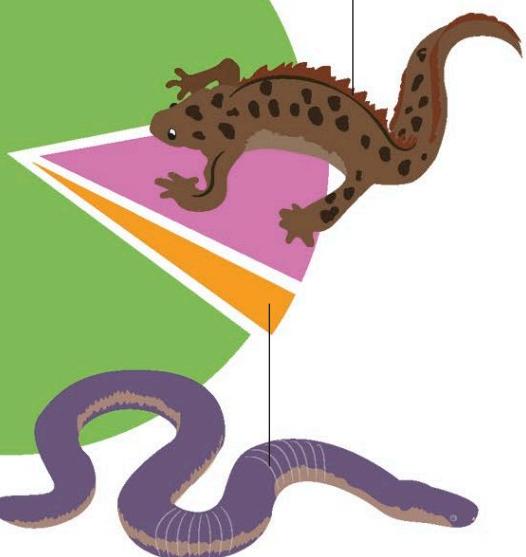
760

Salamanders and newts are biologically very similar animals. However, salamanders spend more time on land, while newts spend more time in water when breeding



7,280

Frogs and toads are the largest group of amphibians. Scientifically, frogs and toads belong to the same animal group, but frogs typically have smoother skin.



210

Caecilians are small, snakelike amphibians with no limbs and tentacles on their heads. They spend most of their lives underground, eating insects and worms. Some species live in water and have a tail fin for swimming.

EXTREME HABITATS

These unique amphibians can withstand the toughest conditions, from icy winters to the darkest caves.



Water-holding frogs have adapted to harsh Australian deserts. They burrow underground and form a waxy cocoon from layers of skin, which retains moisture necessary for survival.



Olms are blind, aquatic salamanders that live in the caves of Slovenia and Croatia. They have excellent smell and hearing, which is helpful when foraging for food, such as snails.



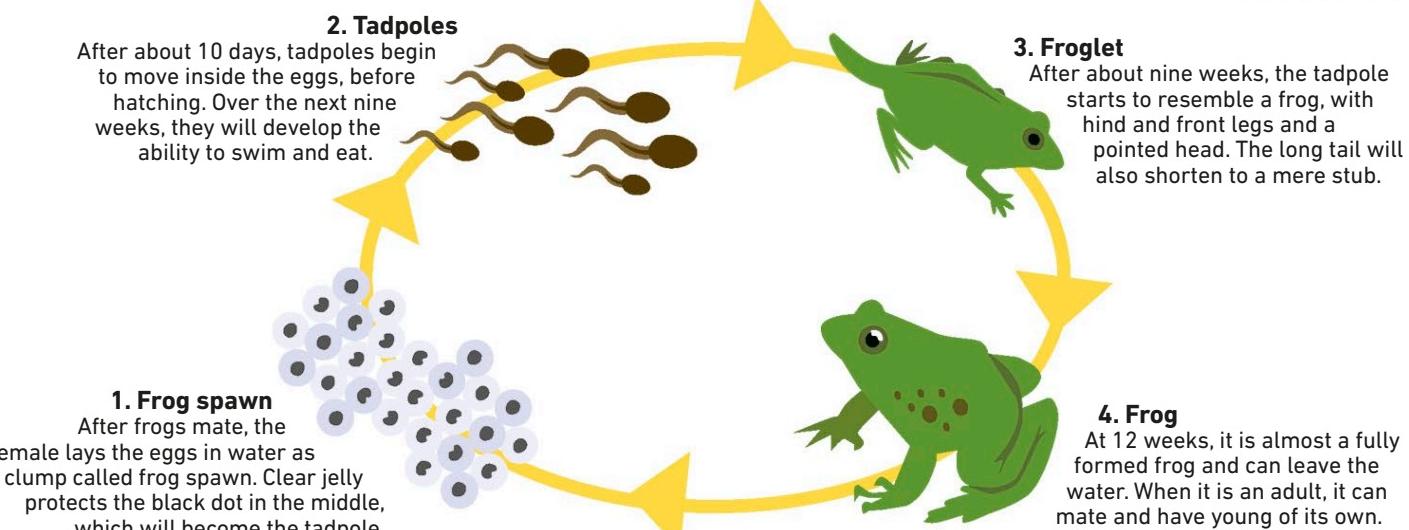
Crab-eating frogs are able to tolerate saltier habitats than other amphibians. Native to Southeast Asia, this frog mainly eats insects, but it also preys on crabs, hence its name.

NEARLY 50%
OF ALL AMPHIBIANS ARE THREATENED, DUE TO **WATER POLLUTION**, **HABITAT DESTRUCTION**, AND THE INTRODUCTION OF **INVASIVE SPECIES**.



FROG LIFE CYCLE

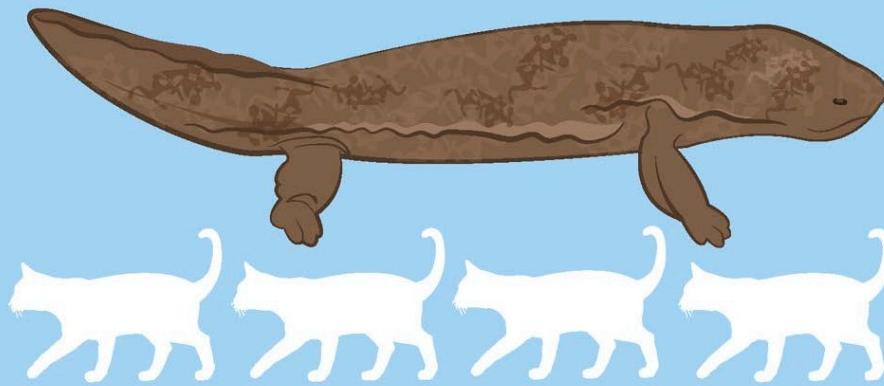
Most frogs undergo a dramatic physical change from a newborn to an adult through several distinct stages—a process known as metamorphosis.



BIGGEST AMPHIBIAN

THE SOUTH CHINA GIANT SALAMANDER CAN GROW

6 FT



SMALLEST AMPHIBIAN

PAEDOPHYRYNE AMAUENSIS, A FROG FROM PAPUA NEW GUINEA, IS NO BIGGER THAN A FLY, UP TO $\frac{5}{16}$ IN (7.7 MM) LONG.



ISLAND FROGS

Some frogs live on only one island, where the conditions—from the weather and habitat to food—are just right.



Solomon Island leaf frogs resemble the color and shape of leaves on the Solomon Islands in the South Pacific. Curiously, they hatch from eggs as fully developed frogs.



Gardiner's Seychelles frogs are one of the tiniest frogs in the world, growing to just $\frac{3}{16}$ in (1 cm). Living in the Seychelles, off the eastern edge of Africa, their habitat is threatened by wildfires.

VENOMOUS AMPHIBIANS

Of all the amphibians, caecilians are probably the most mysterious because they are hard to find in their burrows. However, some experts think these curious creatures, such as the giant caecilian, could have venomous saliva. There are only very few known venomous amphibians, such as Brazil's Greening's frog.



HIGHEST AMPHIBIAN

BOULENGER'S LAZY TOADS LIVE **17,290 FT** (5,270 M) HIGH, IN **GURUDONGMAR LAKE**, INDIA.



ONE GIANT LEAP

Growing up to 6 in (15 cm), American bullfrogs can leap 20 times their own body length, often pouncing on prey such as insects, fish, and even snakes. They live in freshwater ponds, lakes, and marshes in parts of North America.



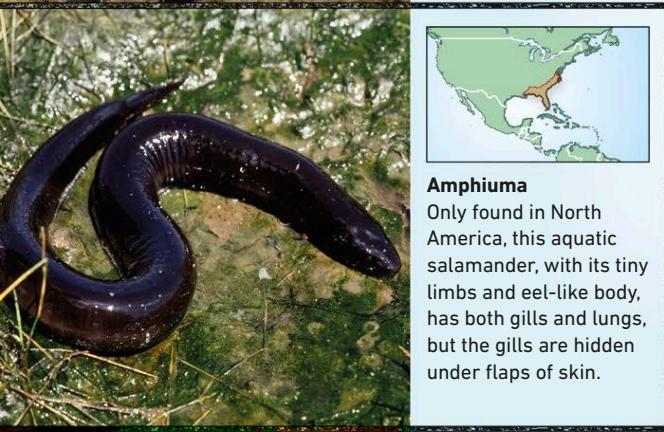
The American bullfrog is the largest frog in North America.

OTHER SALAMANDERS



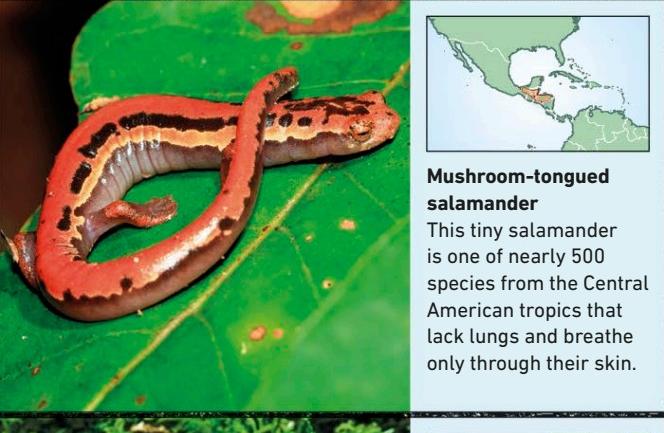
Japanese giant salamander

This is one of the biggest amphibians—up to 4½ ft (1.4 m) long. It lives in cold mountain streams and gets almost all its oxygen directly through its wrinkled skin.



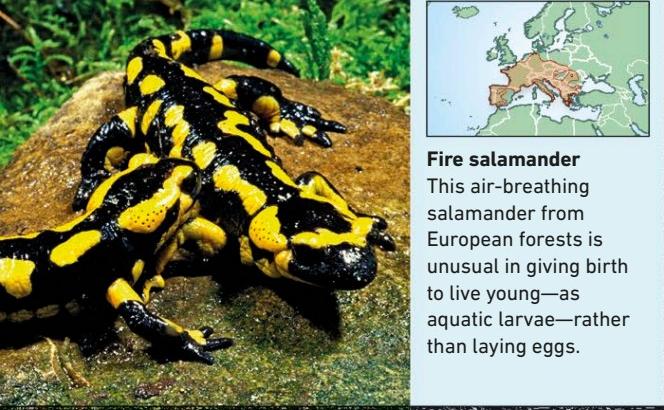
Amphiuma

Only found in North America, this aquatic salamander, with its tiny limbs and eel-like body, has both gills and lungs, but the gills are hidden under flaps of skin.



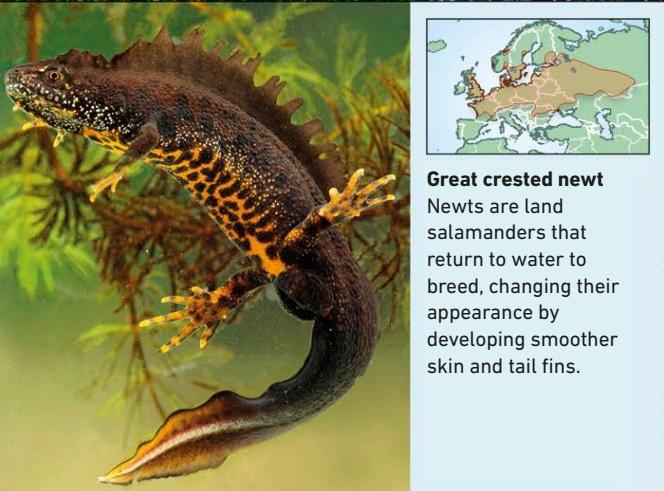
Mushroom-tongued salamander

This tiny salamander is one of nearly 500 species from the Central American tropics that lack lungs and breathe only through their skin.



Fire salamander

This air-breathing salamander from European forests is unusual in giving birth to live young—as aquatic larvae—rather than laying eggs.



Great crested newt

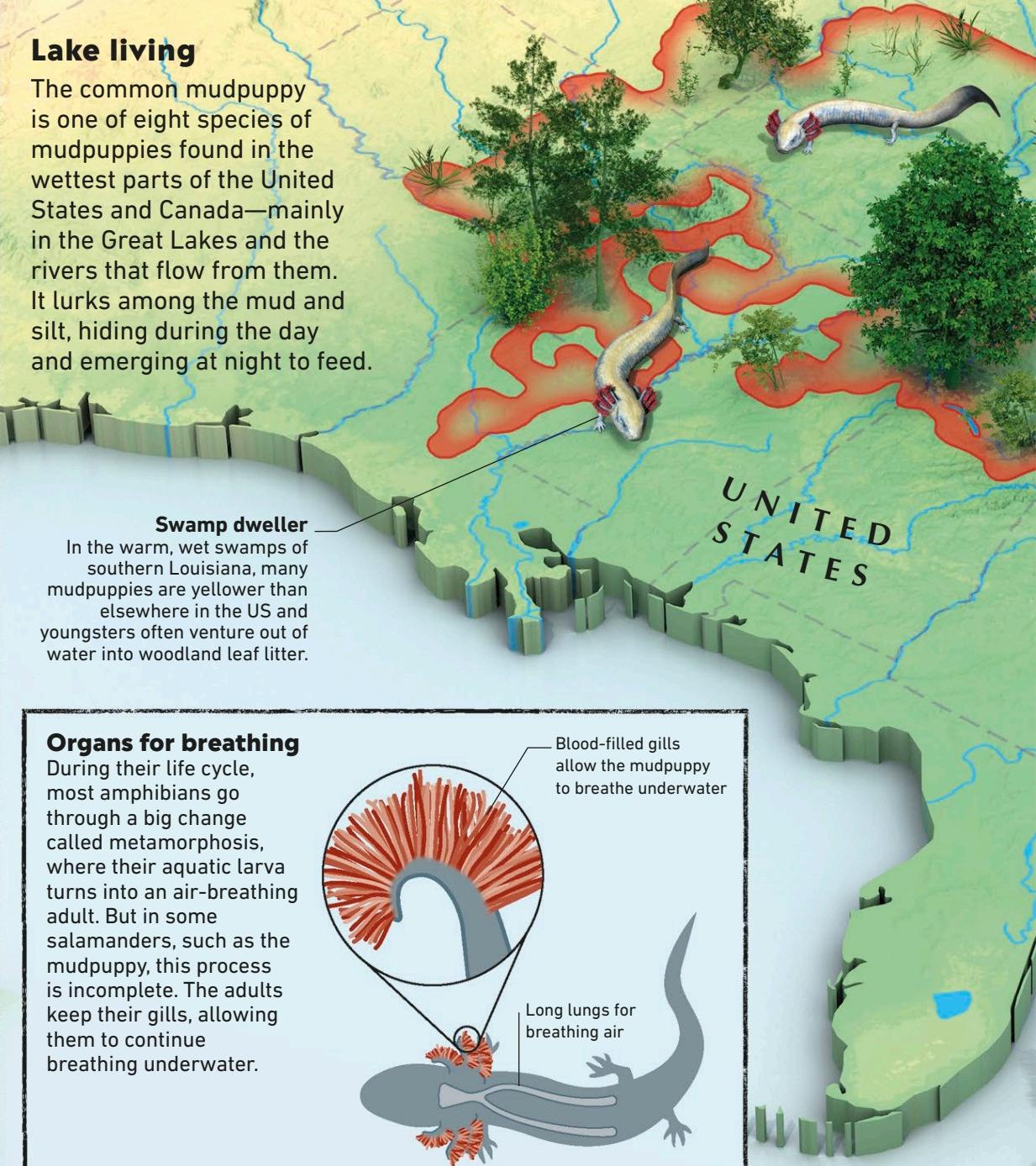
Newts are land salamanders that return to water to breed, changing their appearance by developing smoother skin and tail fins.

Mudpuppy

Salamanders are amphibians shaped like lizards, with long tails and short legs. The mudpuppy is a salamander that lives on river- and lake beds in North America. They get their unusual name because it was once thought they barked like a dog, but in fact their sound is more like a squeak.

Lake living

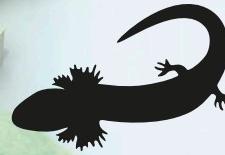
The common mudpuppy is one of eight species of mudpuppies found in the wettest parts of the United States and Canada—mainly in the Great Lakes and the rivers that flow from them. It lurks among the mud and silt, hiding during the day and emerging at night to feed.



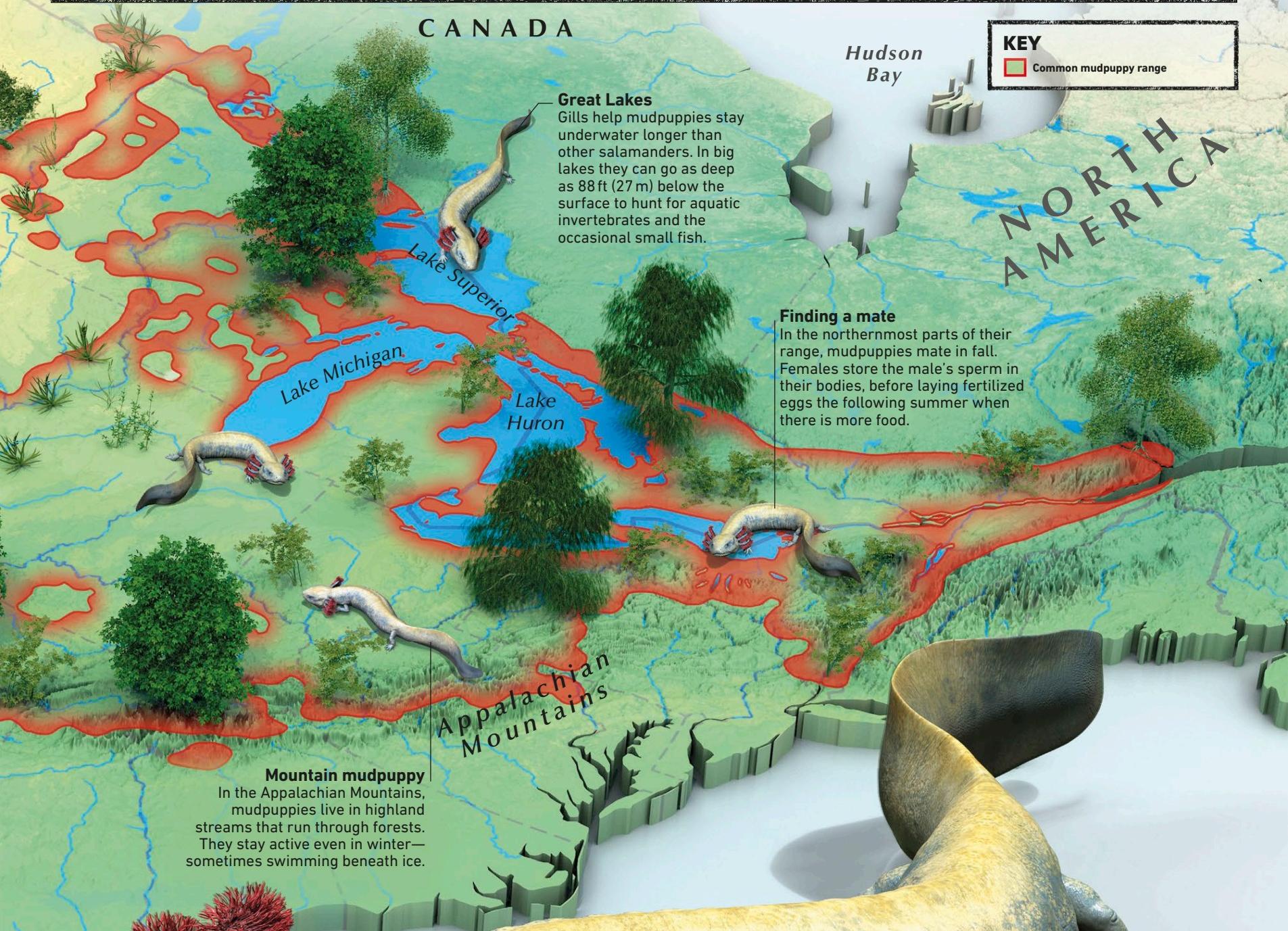
THERE
ARE MORE
THAN

7600

SALAMANDER
SPECIES IN
THE WORLD

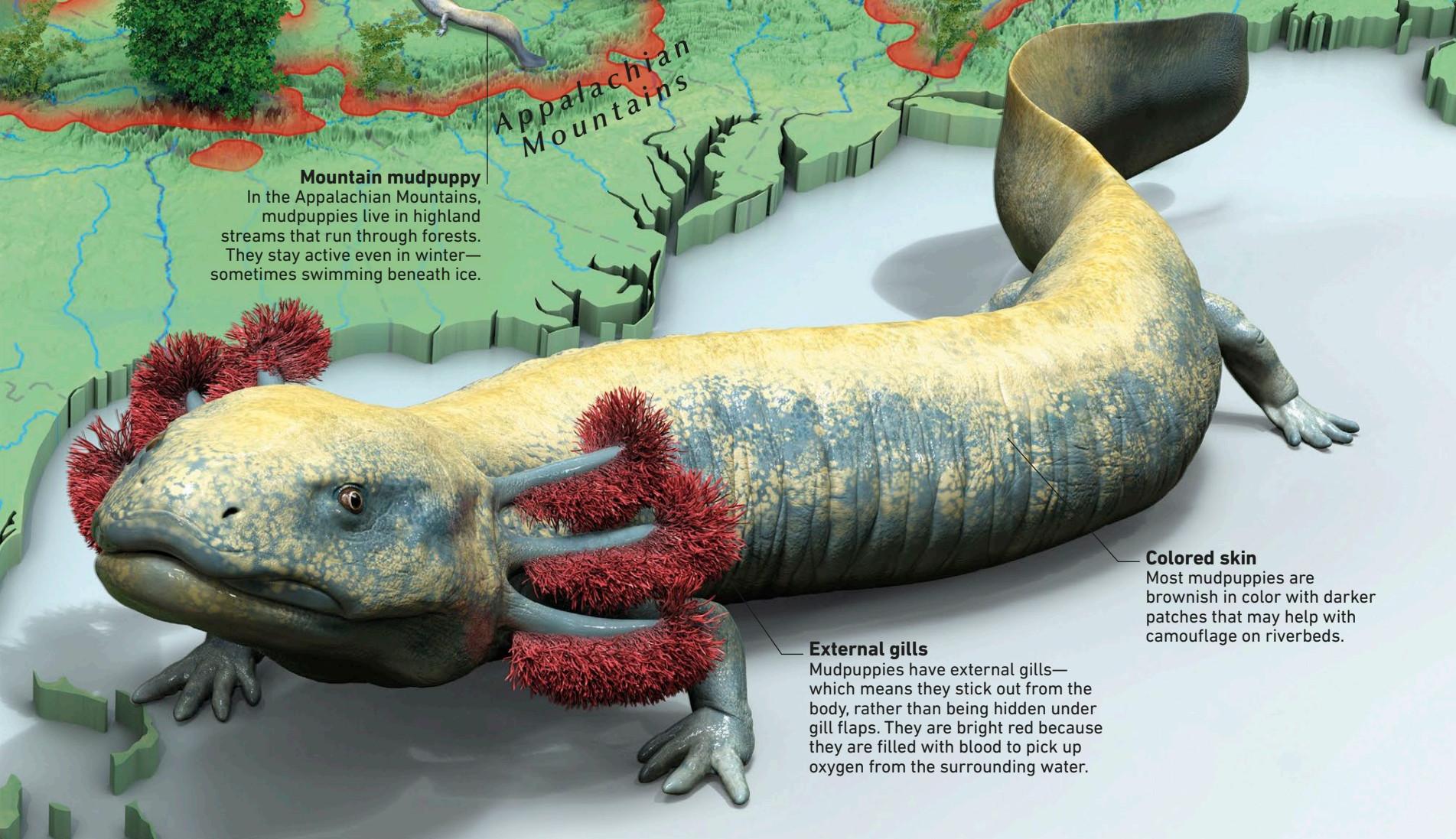


LIKE ALL OTHER AMPHIBIANS,
MUDPUPPIES TAKE IN SOME OXYGEN
DIRECTLY THROUGH THEIR SKIN



KEY

Common mudpuppy range

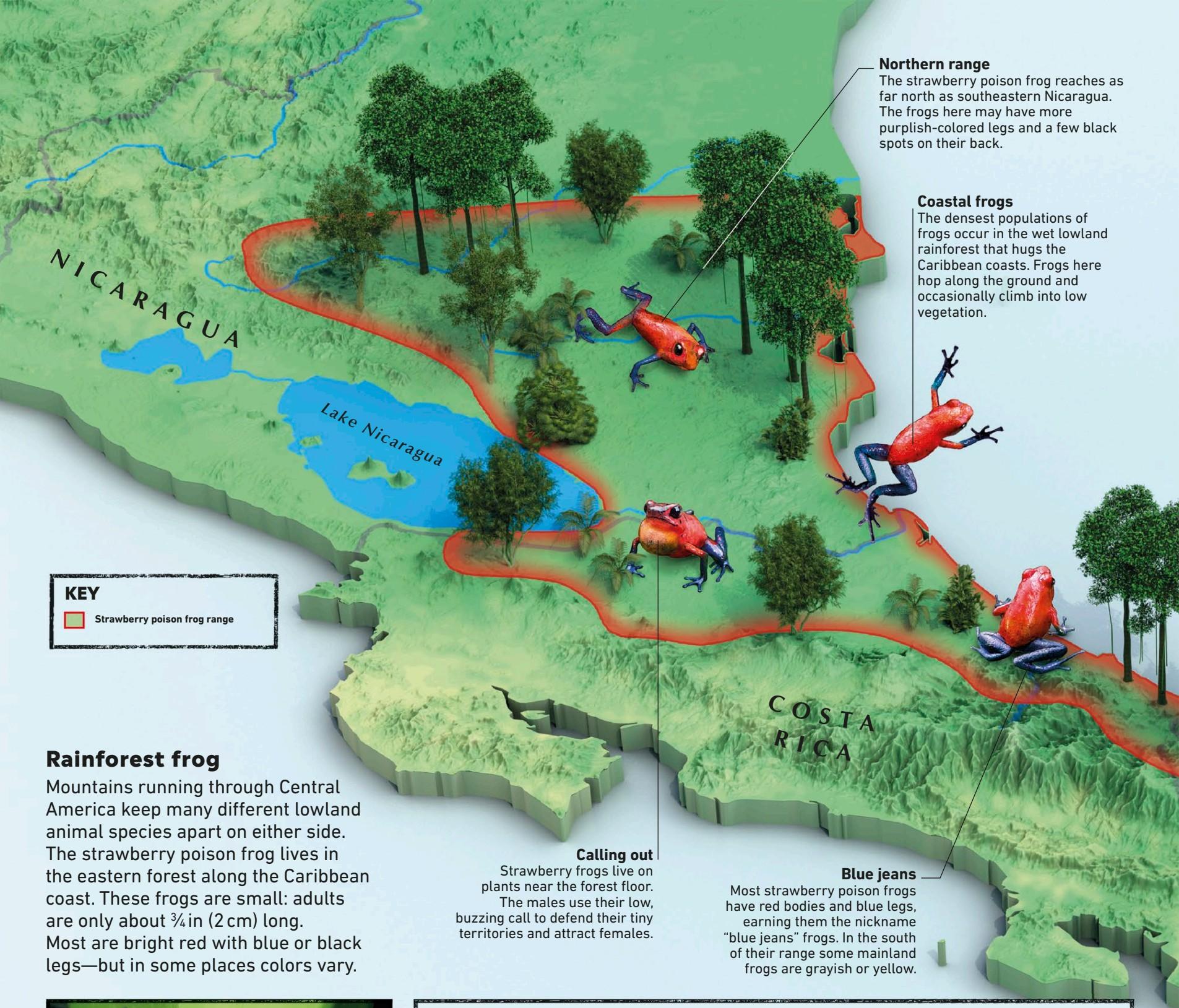






Mossy frog

The Vietnamese mossy frog lives in the rainforest-covered mountains of northern Vietnam. Its mottled green skin, covered in bumps and ridges, blends in with the wet moss that lines the river banks and caves of the frog's forest habitat. It breeds in water-filled tree holes, laying its eggs above the waterline, safe from predators below.



Plant pool

Strawberry poison frogs are careful parents. They lay their eggs on forest leaves. When they hatch, the tadpoles are carried on the mother's back to a pool of water in a bromeliad plant, where they turn into frogs.

Color varieties

The strawberry poison frog comes in more than 100 different colored varieties called morphs. Most of these varieties occur on tiny islands off the Central American coast, where frogs are cut off from those on the mainland. They have different colors because their populations have been separated for thousands of years and have evolved to look different.



Color morphs of the strawberry poison frog

Strawberry poison frog



Most amphibians rely on poisons to defend themselves. Glands in their skin ooze chemicals that can be irritating or even deadly. The strawberry poison frog from Central America excels at defending itself in this way—and warns off enemies with its bright colors.

THIS FROG GETS ITS POISON FROM THE ANTS IT EATS



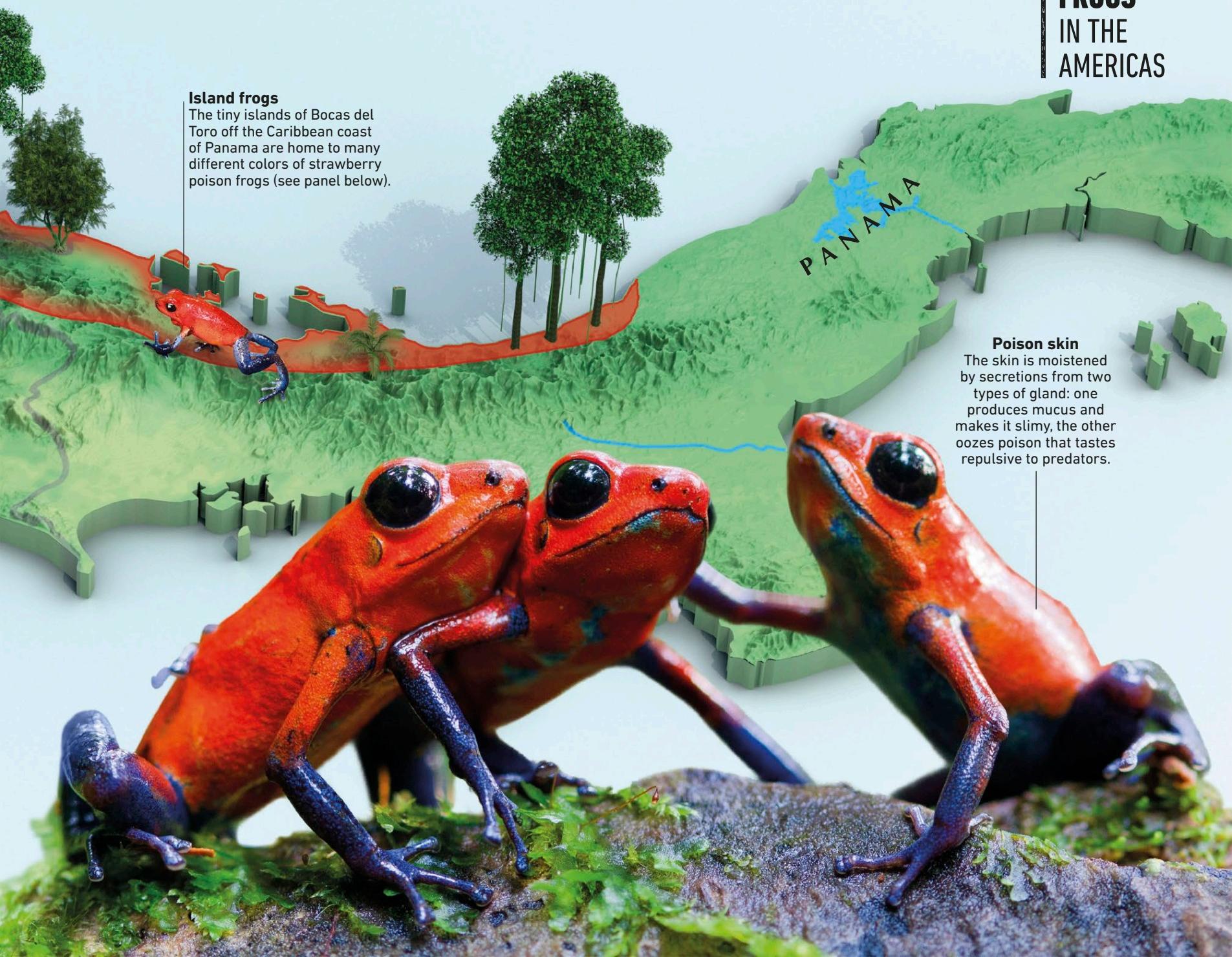
THERE ARE
200
SPECIES
OF POISON
FROGS
IN THE
AMERICAS

Island frogs

The tiny islands of Bocas del Toro off the Caribbean coast of Panama are home to many different colors of strawberry poison frogs (see panel below).

PANAMA

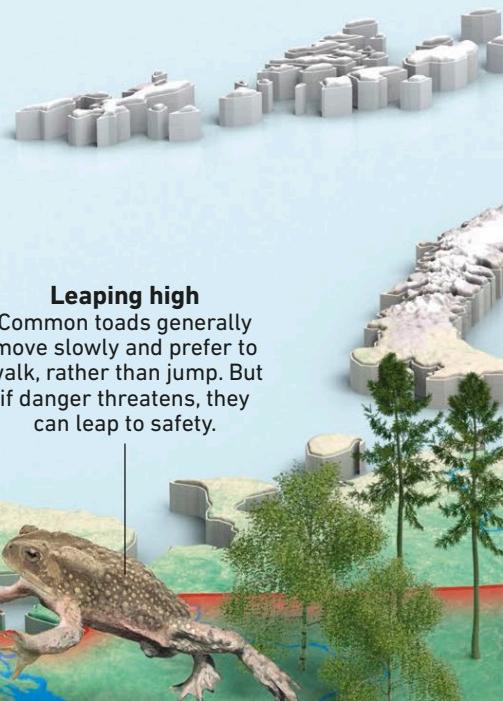
Poison skin
The skin is moistened by secretions from two types of gland: one produces mucus and makes it slimy, the other oozes poison that tastes repulsive to predators.



Common toad

Amphibians need moisture to survive, but some are tolerant of a range of different habitats.

The common toad, one of more than 600 toad species across the world, is the most widespread in Europe. It lives equally well in forests, alpine meadows, and dry sand dunes.



KEY
Common toad range

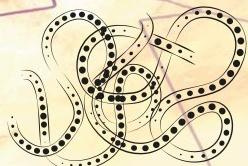


Defensive posture

Toads have poison glands in their skin to deter predators, but when threatened will stretch their legs and arch their back to look bigger for extra defense.

On the move

Common toads hibernate in winter, in mud burrows or beneath piles of logs or leaves. When spring comes, they travel overland back to the same ponds in which they were spawned, in order to breed.



EACH EGG STRING LAID BY A FEMALE COMMON TOAD CAN CONTAIN UP TO

3,000 EGGS

Breeding pools

Like most amphibians, toads lay their eggs in pools of water. The female common toad lays her eggs in two long strings, each up to 16 ft (5 m) long. The eggs will hatch into aquatic larvae, or tadpoles.

**Mass migration**

Each springtime, large numbers of common toads emerge from hibernation and travel to their breeding pools. In some places, special toad-crossing tunnels have been built to help them cross roads safely.

**Mating toads**

When mating in ponds, the male toad grabs the larger female around the waist just behind her front legs and then fertilizes the strings of eggs as they are released into the water.

Bulging eyes

The large eyes of a common toad give it good night vision. Common toads are most active at night, using the cover of darkness to hunt for prey.

ASIA

Temperate belt

The common toad is found throughout much of Europe—in the temperate belt south of the cold polar regions and north of hotter Africa and Asia. It lives most of its life away from water, hiding in damp, shady places, returning to the water only to breed.

Tongue attack

The toad catches invertebrate prey, such as slugs, snails, and spiders, with a long, sticky-tipped tongue that shoots out of its mouth at lightning speed.





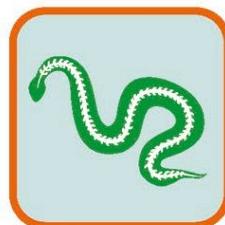
A close-up photograph of a lizard's skin, likely a gecko, showing its intricate scale patterns. The scales are rounded and overlapping, with a variety of colors including bright yellow, green, red, and blue. Some scales have distinct patterns like stripes or dots. The lighting highlights the texture and depth of the scales.

REPTILES

Reptile facts

Scaly and cold-blooded, reptiles first appeared around 310 million years ago and were the first backboned animals that could live entirely on land. From desert snakes to migrating sea turtles, reptiles today are scattered throughout the world, except the very coldest habitats.

WHAT IS A REPTILE?



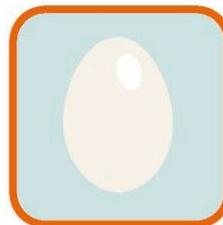
Vertebrates

From slithery snakes to giant tortoises, all reptiles are supported by a bony skeleton.



Cold-blooded

The body temperature of all reptiles changes depending on their environment.



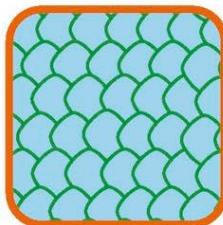
Lay eggs

Most reptiles, from crocodiles to lizards, lay soft, leathery, and waterproof eggs.



Live young

Some snakes and lizards do not lay eggs like most other reptiles, but instead give birth to live young.



Scaly skin

Reptilian skin is covered in protective scales, or in some cases, horny plates.

REPTILE TYPES

ESTIMATED NUMBER OF REPTILE SPECIES:

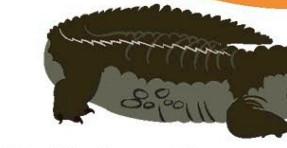
11,340

360

Turtles and tortoises have domed shells that are fused to their spine and ribs. Tortoises live on land, while turtles live in oceans and fresh waters.

10,953

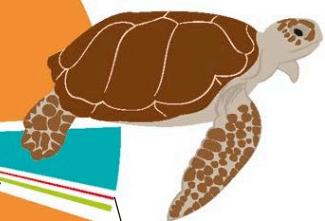
Lizards and snakes are the largest order of reptiles. They are found worldwide, but are more widespread in tropical or warmer climates.



26

Crocodilians

include crocodiles, alligators, and their relatives. They are the biggest and most formidable of all reptiles. They spend most of their time in water, although some hunt on land.



Tuatara is one of a kind, and lives in New Zealand. It is closely related to lizards, as it has small scales on its skin.

EXTREME HABITATS

From the freezing Arctic to underground burrows in the desert, some reptiles survive and thrive in the most incredible ways.



Common European adders are the only snake species found within the Arctic Circle. Its huge range also extends from temperate woodlands to the European Alps 9,840 ft (3,000 m) high.

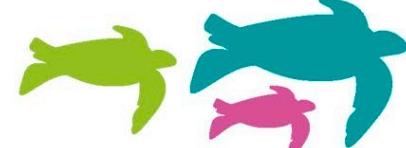


Gopher tortoises survive the intense heat and cold of the American Mojave Desert by burrowing underground with their sharp claws. They spend up to 95 percent of their lives in these burrows.



Sea snakes are the best-adapted reptile for life in water. All true sea snakes give birth to live young, without ever coming ashore to lay eggs. They live mainly in tropical oceans.

LONGEST MIGRATION



LEATHERBACK TURTLES CAN TRAVEL 12,750 MILES (20,500 KM) FROM THEIR INDONESIAN BREEDING GROUND TO FEED OFF THE PACIFIC COAST OF THE USA.

BIGGEST GATHERING

EACH SPRING INSIDE THE SNAKE DENS OF NARCISSE, MANITOBA, CANADA, 75,000 RED-SIDED GARTER SNAKES CONGREGATE IN A MATING FRENZY, WITH UP TO 100 MALES VYING FOR EVERY FEMALE.



SMALLEST REPTILE



THE VIRGIN ISLANDS DWARF SPHAERO IS ONLY $5\frac{1}{8}$ IN (1.6 CM) LONG.

OLDEST REPTILE

BORN IN 1832, THE OLDEST-LIVING LAND ANIMAL IS A SEYCHELLES GIANT TORTOISE CALLED JONATHAN.



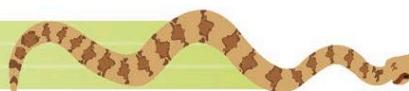
LONGEST REPTILE

THE RETICULATED PYTHON OF SOUTHEAST ASIA HAS SET THE RECORD-BREAKING LENGTH OF 33 FT (10 M).

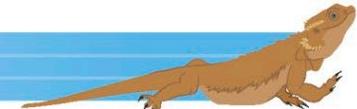
FASTEST REPTILE

In a reptilian race between the fastest snake and swiftest lizard, the lizard would easily cross the finish line first.

FASTEST SNAKE: SIDEWINDER AT 18 MPH (28 KPH)



FASTEST LIZARD: BEARDED DRAGON AT 25 MPH (40 KPH)



SNAKE MOTION

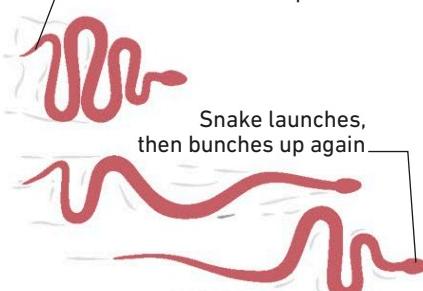
A snake can move in four main ways. Some species can switch between styles of moving, depending on the surface.



Straight

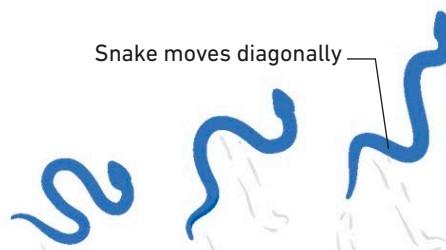
Scales along a snake's belly provide traction on the ground for it to propel itself in a line, using the muscles around its long ribcage.

Tail is pressed to the ground as snake bunches up



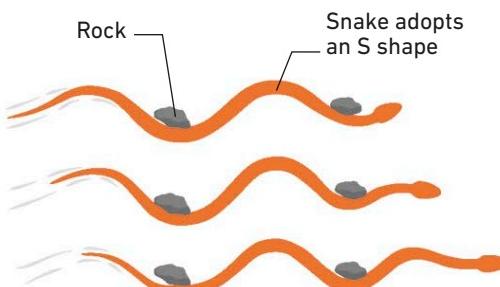
Concertina

To get a good grip on a smooth surface, a snake can bunch up before pulling its back end up and launching itself forward.



Sidewinding

In open spaces such as sandy deserts, some snakes fling their head sideways through the air, with the rest of the body following.



Serpentine

This common style involves a snake pushing itself off a bump on a surface or an object, and continuing forward in a wavy motion.

HIGHEST-LIVING REPTILE



THE RED TAIL TOAD-HEADED LIZARD HAS BEEN SEEN AT 17,390 FT (5,300 M). IT LIVES IN THE QIANGTANG PLATEAU IN NORTHERN TIBET.

SMART REPTILE

The mugger crocodile in India has been observed using sticks to lure birds, such as egrets or herons, who may be looking to build a nest. It waits motionless and partially submerged, then snaps up its unsuspecting prey when it is close enough.



KEY

- Volcán Wolf giant tortoise
- Fernandina giant tortoise
- Volcán Alcedo giant tortoise
- Santiago giant tortoise
- Santa Cruz giant tortoise
- San Cristóbal giant tortoise
- Española giant tortoise

ANIMALS IN DANGER

Of the 14 species of Galápagos giant tortoise listed by the IUCN, six are regarded as critically endangered, three as endangered, two as extinct, and the rest as vulnerable. Hunting and habitat destruction have been threats in the past, but now conservation measures are slowly making progress.



Isla Pinta

Isla Marchena

**Santiago giant tortoise**

Giant tortoises on Santiago have been hunted extensively in the past, but protection is now helping to restore the species. Their shells are intermediate, between dome-shaped and saddleback-shaped.



Isla Santiago



Isla Pinzón

**Fernandina giant tortoise**

For more than 100 years, the saddleback-shelled tortoises from the island of Fernandina were thought to be extinct, until a century-old female was discovered in 2019, raising hopes that others have survived too.

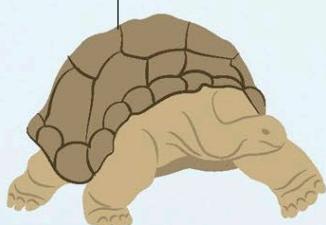


THE ESTIMATED LIFESPAN OF A GALÁPAGOS GIANT TORTOISE IS 170 YEARS

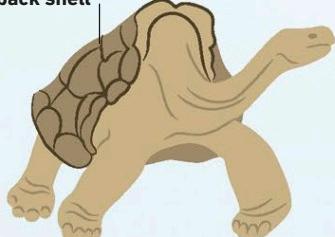


Horny beak
Tortoises lack teeth, but instead have a sharp-edged beak that is used to crop vegetation – mostly in the form of grass, shrubs, cactuses, and the occasional fruit.

Domed shell



Saddleback shell

**Shell shape and diet**

On wetter islands with plenty of ground plants to graze, the shells of Galápagos giant tortoises are dome-shaped. But on drier islands, tortoises have evolved raised shells – called saddlebacks – and long necks. This helps them reach tall cactuses that grow higher from the ground.

**Lonesome George**

In 1971, scientists found the only surviving Pinta Island giant tortoise. The rest of its kind had died out, due to the overgrazing by goats introduced to the island. Named Lonesome George, this tortoise became a symbol of conservation, living out his life in captivity. He died in 2012.

**Santa Cruz giant tortoise**

The dome-shelled giant tortoises of Santa Cruz live in separate populations on this island, and studies suggest that they might be different species.

Island giants

The Galápagos Islands erupted from the ocean more than three million years ago.

Tortoises landed on their shores after floating across the waters from South America. With no natural predators, they evolved into giants and, as they adapted to the different conditions and food sources on each island, into separate species. Seven of these are shown on this map.

San Cristóbal giant tortoise

Animals introduced to this island, such as dogs and donkeys, drove San Cristóbal tortoises almost to extinction, but better control measures and captive breeding are helping to save the species.

**Españaola giant tortoise**

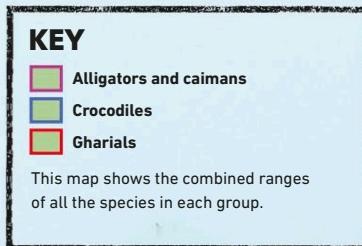
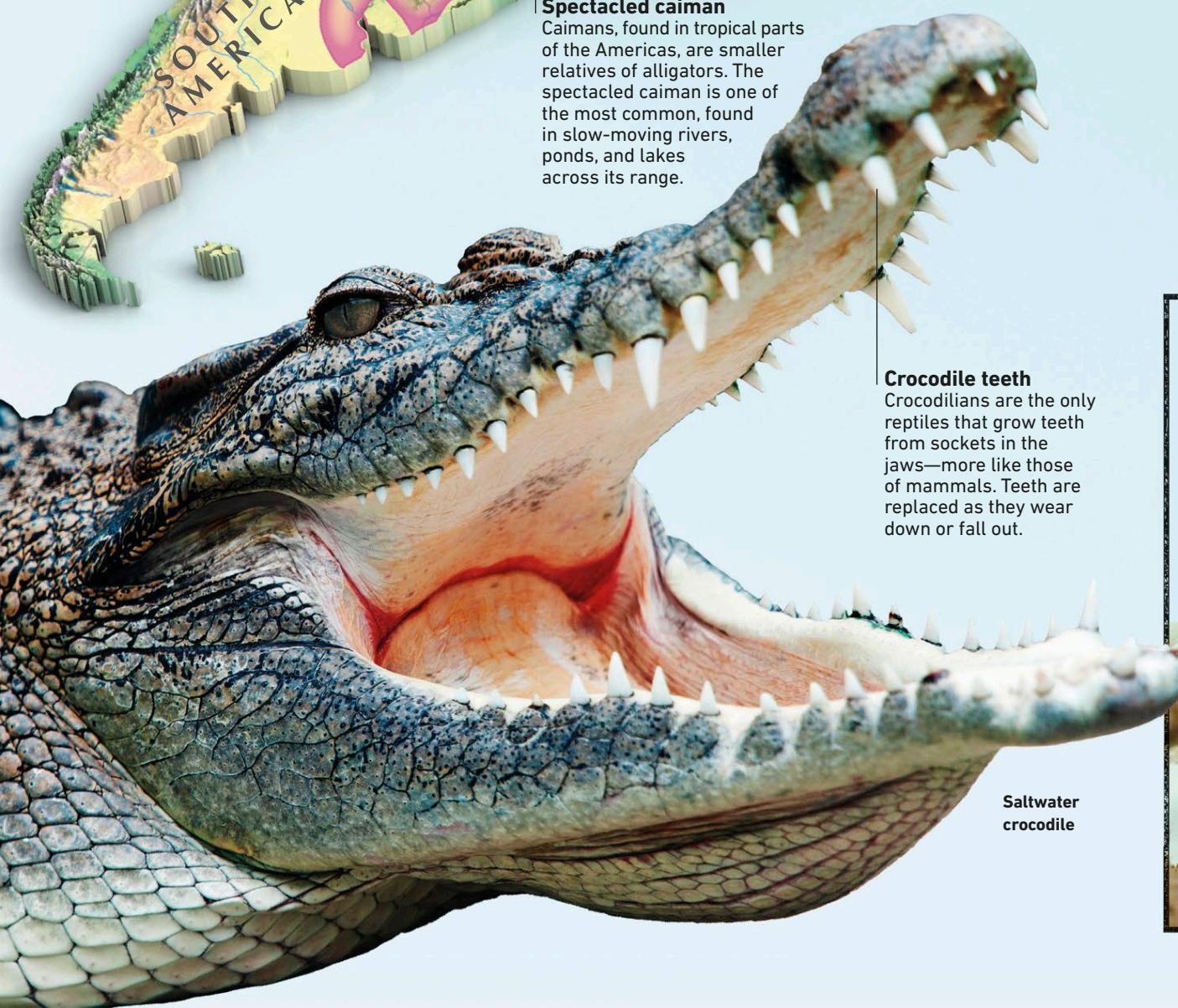
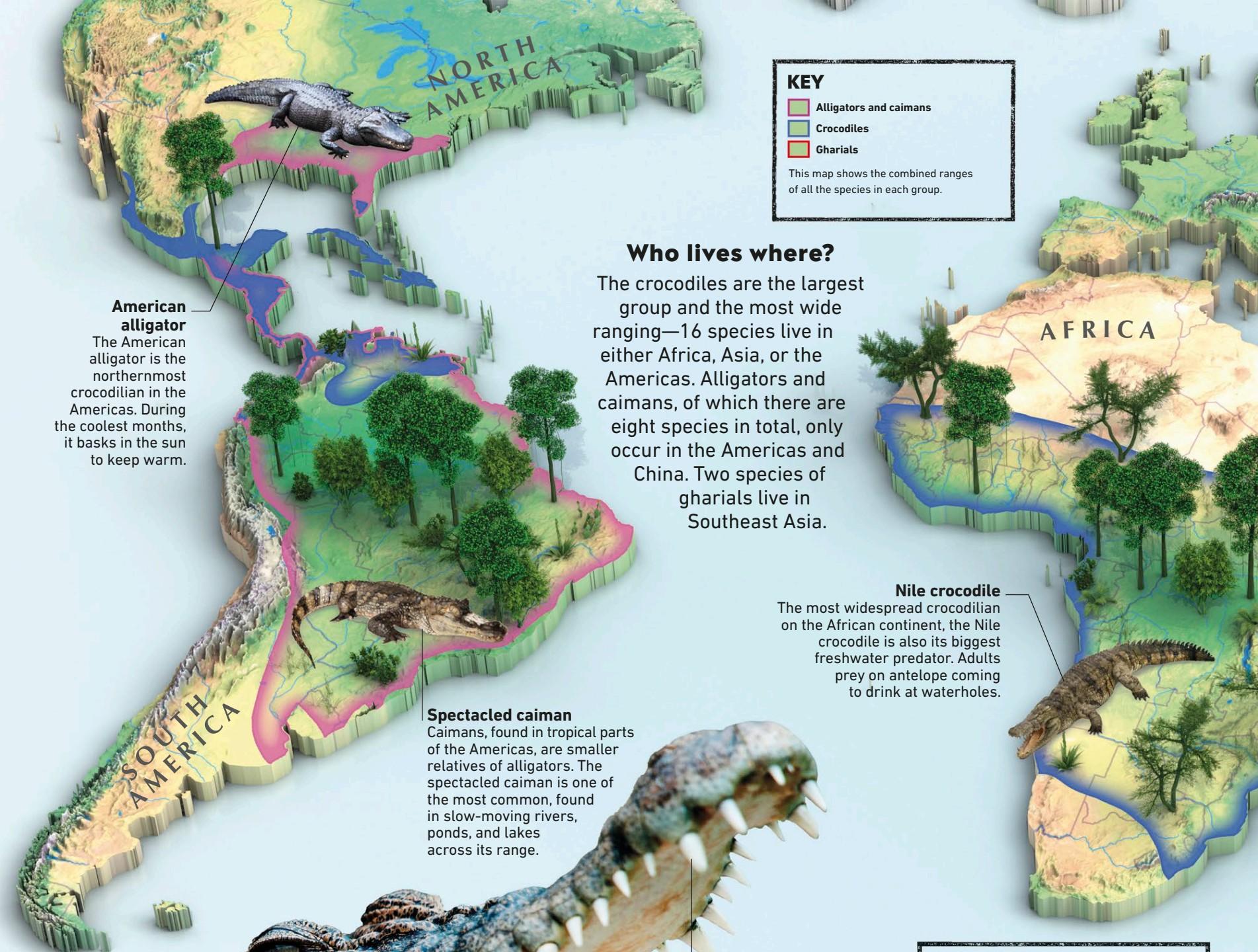
On one of the oldest and most barren of the Galápagos Islands, Españaola tortoises have especially high-saddled shells to help them reach up to nibble on the scarce food growing here, such as cactuses.



Galápagos giant tortoises

Tortoises are slow-moving reptiles with a heavy, protective shell. Some of the biggest tortoises on Earth live on the rugged, volcanic Galápagos Islands far out in the Pacific Ocean. Each island is home to its own species.





Who lives where?

The crocodiles are the largest group and the most wide ranging—16 species live in either Africa, Asia, or the Americas. Alligators and caimans, of which there are eight species in total, only occur in the Americas and China. Two species of gharials live in Southeast Asia.



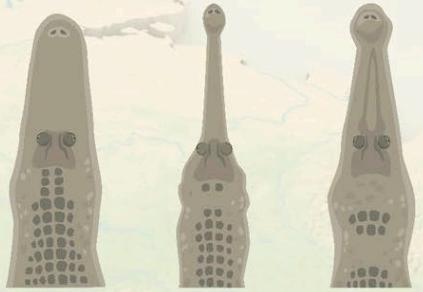
Boy or girl?
Crocodilian eggs get incubated in a nest, wrapped in warm soil or vegetation, before hatching like this little Nile crocodile. There can be up to 80 eggs in a nest, and the sex of each depends on its temperature. The warmer eggs turn male and the cooler ones female.

ANIMALS IN DANGER

 Of the 26 species, seven are critically endangered. Most species are decreasing in numbers. Threats vary, from poaching to pollution, but often involve human activities interfering with their natural habitats.

Different head shapes

The three types of crocodilians differ mainly in the shapes of their snouts: alligators and caimans typically have broader snouts than crocodiles, while the fish-eating gharials have the slenderest snouts of all, ending in a bulblike growth. Many crocodiles show exposed teeth in the lower jaw, even with their jaws closed.



Alligators and caimans

Gharials

Crocodiles

Alligator outpost

The only alligator outside of the Americas is the Chinese alligator, which lives on the northern edge of the tropics. It hibernates during the cooler months.

Mugger crocodile

The mugger lives in the shallows of wetlands on the Indian subcontinent. It burrows underground to escape the fiercest heat of the sun.

Gharial

The gharial from mainland Asia, and the false gharial from islands further south, spend more time in water than other crocodilians. They specialize in hunting for fish and, sometimes, frogs.

Saltwater crocodile

The world's largest crocodilian is also the most salt-tolerant. "Salties" often swim in coastal ocean waters, and have spread across a wide range of islands in Asia and Australasia and Oceania.

Crocodylians

The world's biggest reptiles live wherever it is warm enough for them to hunt and raise a family—by rivers and lakes in tropical regions on both sides of the equator. They are divided into three groups: alligators and caimans, crocodiles, and gharials.



110

THE NUMBER OF TEETH OF
A GHARIAL—MORE THAN
ANY OTHER CROCODILIAN

THERE ARE FEWER THAN 80
ADULT CHINESE ALLIGATORS
LEFT IN THE WILD

Chameleons



Strange-looking, slow-moving lizards with conical eyes and grasping tails, chameleons live in the tropics of Africa and southern Asia. Over half of the 200 chameleon species are found on the island of Madagascar and nowhere else. The island is home to the biggest and smallest of them all.

KEY
Madagascan giant chameleon
Labord's chameleon
Elongate leaf chameleon
Panther chameleon
Parson's chameleon



A CHAMELEON'S TONGUE
CAN EXTEND TWICE THE LENGTH OF ITS BODY

Madagascar chameleons

Almost all chameleons live in forests. Some climb the trees while others live on the ground. This map shows five of the chameleon species that live on Madagascar. The island is drier in the west and wetter in the east, and it is in the rich rainforests of eastern Madagascar that most species occur, but many are now threatened by deforestation.

ANIMALS IN DANGER**Labord's chameleon**

IUCN status: vulnerable
 Population estimate: unknown

Elongate leaf chameleon

IUCN status: vulnerable
 Population estimate: unknown

Parson's chameleon

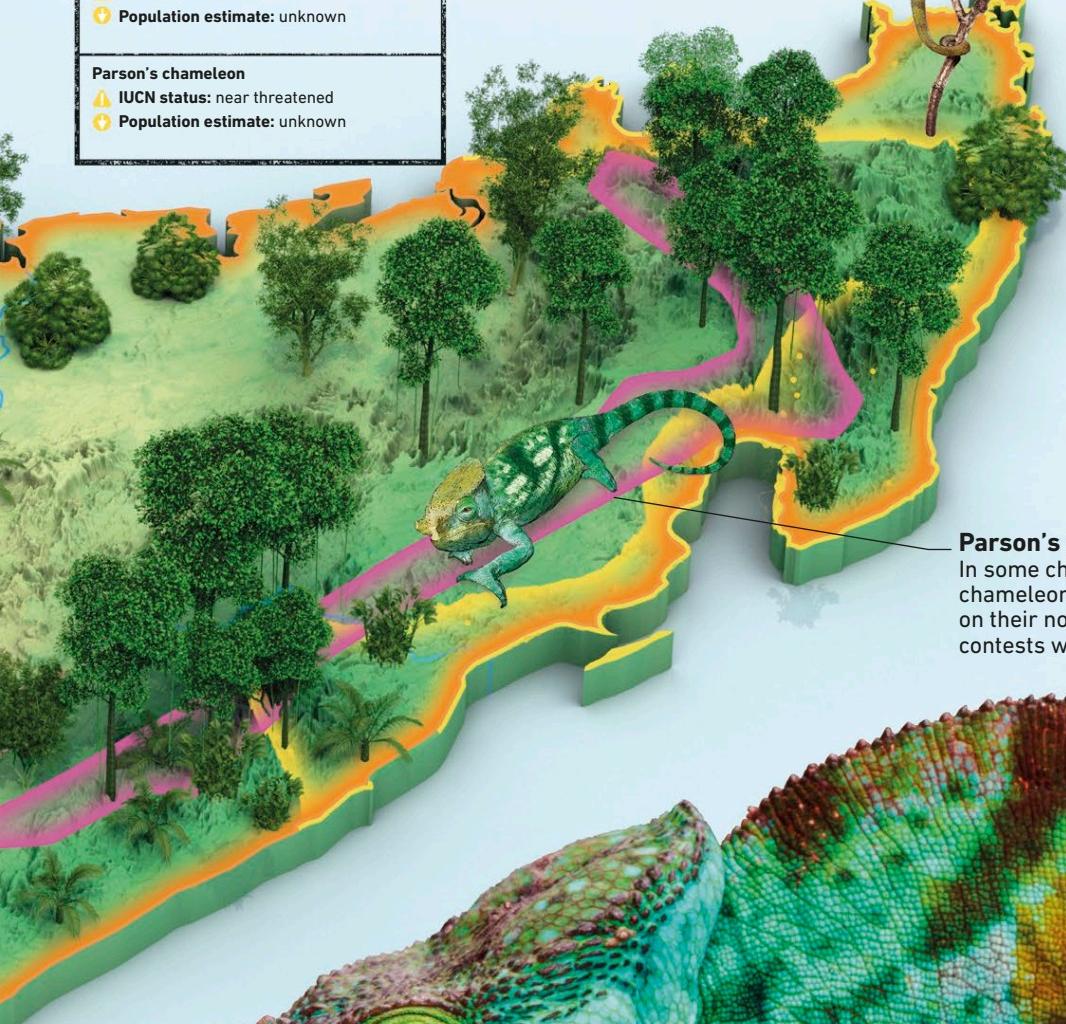
IUCN status: near threatened
 Population estimate: unknown

Panther chameleon

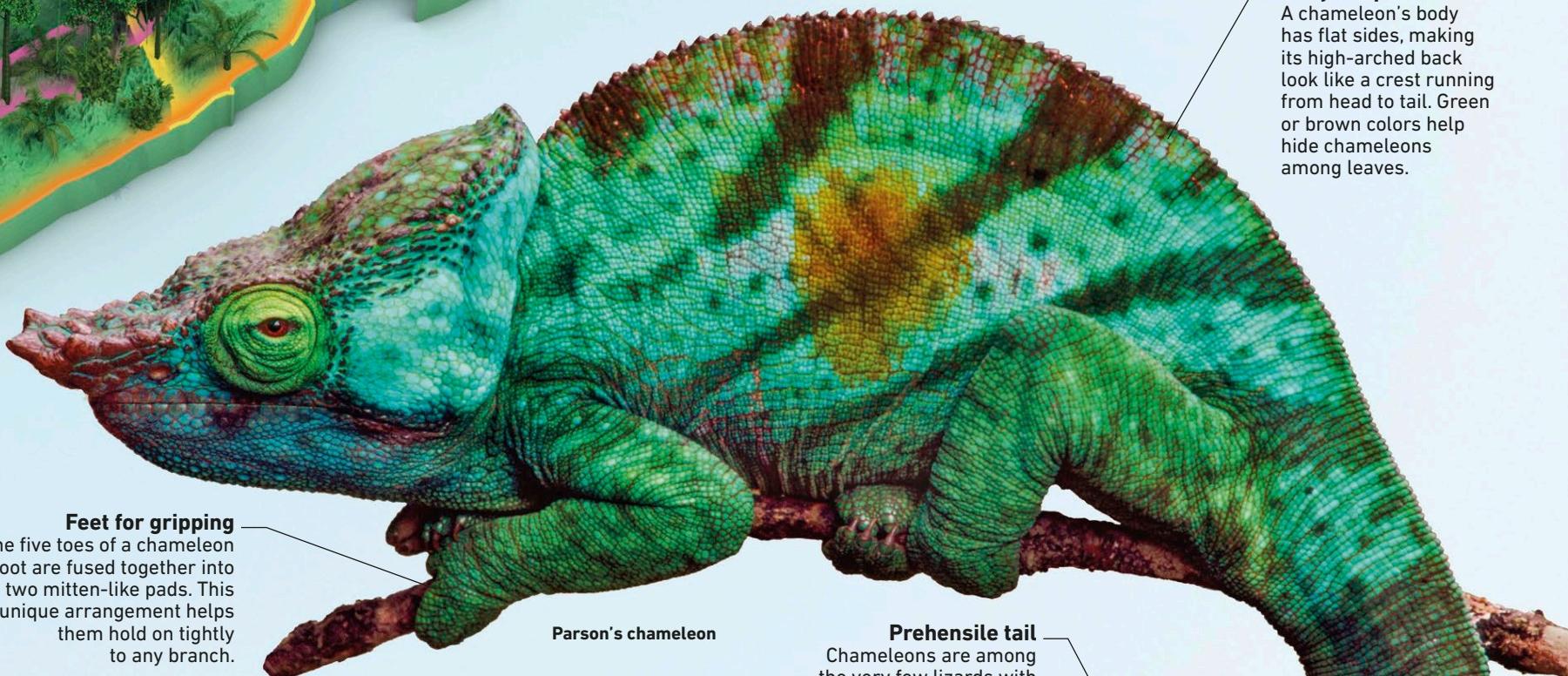
Male panther chameleons vary a great deal in color depending on where they live. Some are red, green, and yellow, others are turquoise-green or grayish. Most females are pinkish-brown.

**Chameleon colors**

Chameleons have a famous ability to change color, usually according to their mood. A male panther chameleon switches to an especially bright pattern when showing off to potential mates or competing males. The color change comes from tiny crystals in the skin that reflect light in different ways.

**Parson's chameleon**

In some chameleons, such as the Parson's chameleon, the males have prominent horns on their nose, which they use in "jousting" contests when defending territory.

**Body shape**

A chameleon's body has flat sides, making its high-arched back look like a crest running from head to tail. Green or brown colors help hide chameleons among leaves.

Feet for gripping

The five toes of a chameleon foot are fused together into two mitten-like pads. This unique arrangement helps them hold on tightly to any branch.

Parson's chameleon**Mini chameleon**

The world's smallest chameleon, known only by its scientific name of *Brookesia micra*, is also one of the smallest reptiles in the world. It can grow to just 1½ in (3 cm) long, tail included, and spends its life among leaf litter. It was discovered on the tiny islet of Nosy Hara off the north coast of Madagascar.

Prehensile tail

Chameleons are among the very few lizards with completely prehensile tails. This means they can use their tail like a fifth limb to grip branches as they climb through trees.





A close-up photograph of an armored lizard's body. The lizard has a dark, spiny tail and a body covered in large, overlapping, brownish-orange scales. The scales have distinct serrated edges and some show signs of wear and discoloration. The background is a blurred, sandy or rocky desert environment.

Armored lizard

The dragon-like armadillo girdled lizard is covered by protective spiny plates—except on its underside. To shield its soft belly from predator attacks, it grabs hold of its tail and curls up in a ball, like an armadillo (see p.109). This lizard lives in large family groups inside rock crevices in South Africa's western deserts.

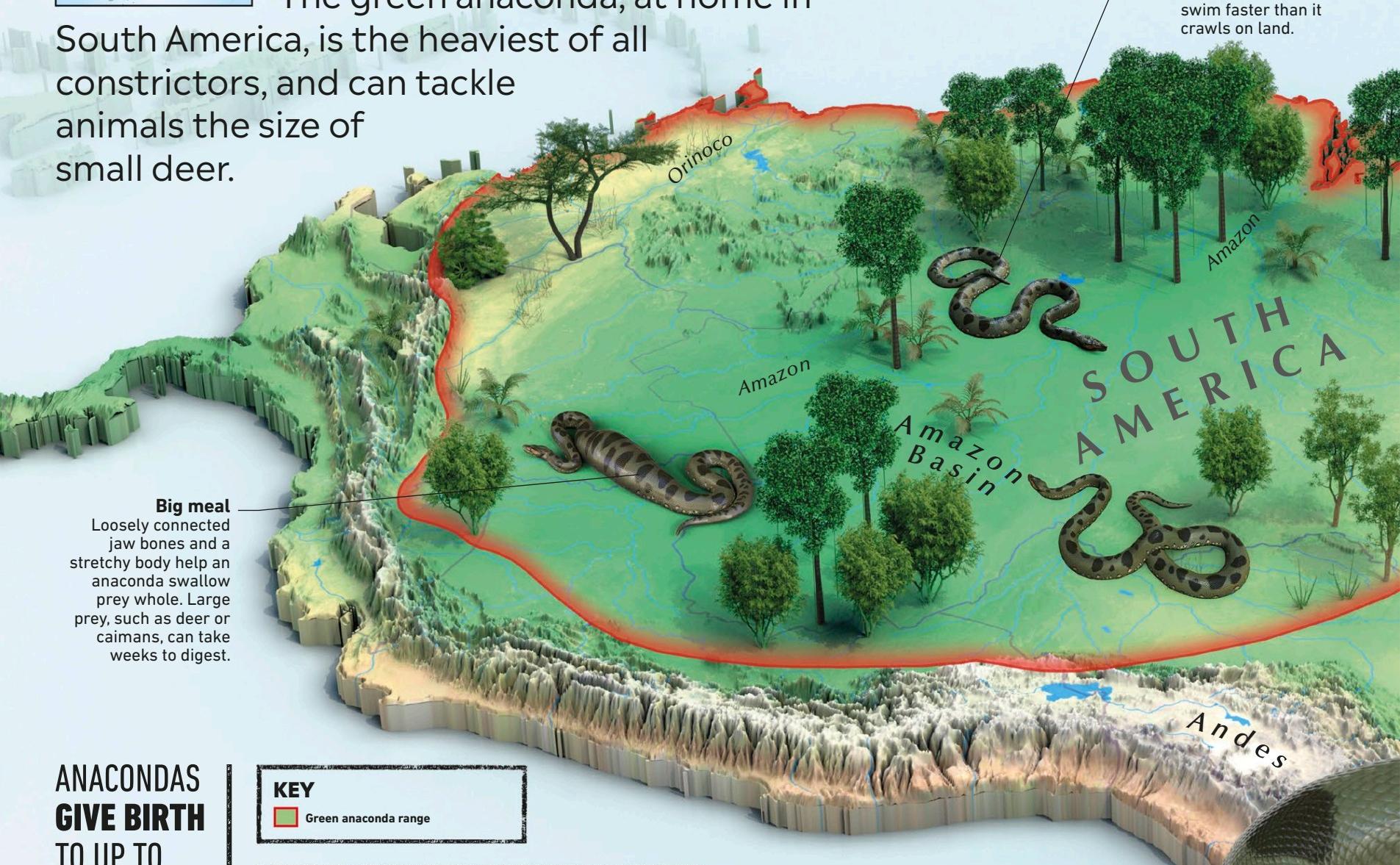
Green anaconda



All snakes prey on other animals, but the biggest kill by constriction, rather than venom.

The green anaconda, at home in South America, is the heaviest of all constrictors, and can tackle animals the size of small deer.

River snake
More than 1,000 rivers run through the Amazon Basin, making it the perfect habitat for the green anaconda, which can swim faster than it crawls on land.



**ANACONDAS
GIVE BIRTH
TO UP TO**

300

**YOUNG
AT A TIME**



KEY

■ Green anaconda range

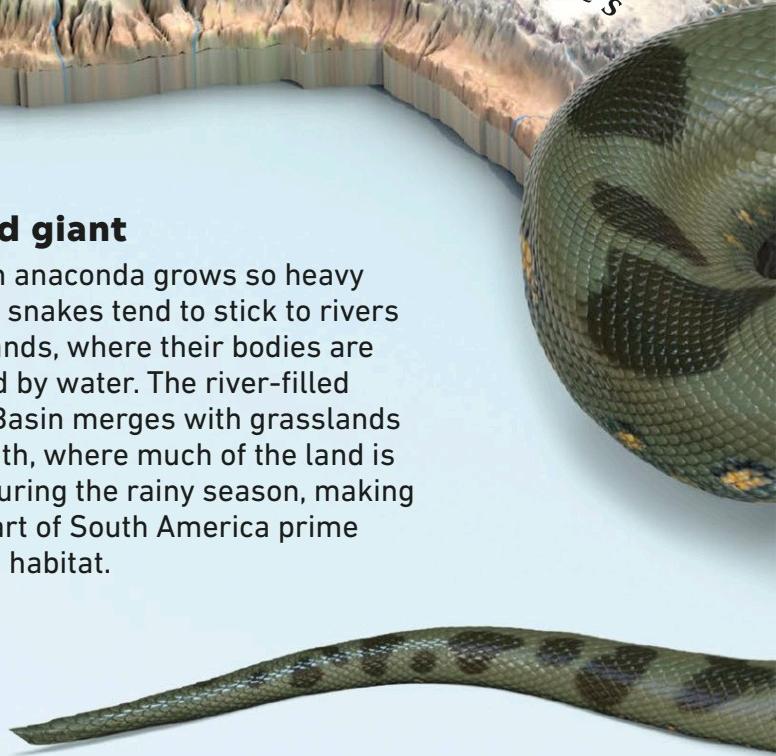
Squeezed prey

Constrictors such as anacondas kill not by crushing, but by suffocation. The snake squeezes tighter each time its victim exhales, so breathing becomes impossible, and the heart stops.



Wetland giant

The green anaconda grows so heavy that adult snakes tend to stick to rivers and wetlands, where their bodies are supported by water. The river-filled Amazon Basin merges with grasslands in the south, where much of the land is flooded during the rainy season, making a large part of South America prime anaconda habitat.



OTHER LARGE CONSTRUCTORS

Top vision

The eyes of a green anaconda are set higher on the head than those of many other snakes. This helps it keep watch at the water's surface, while its body is submerged.

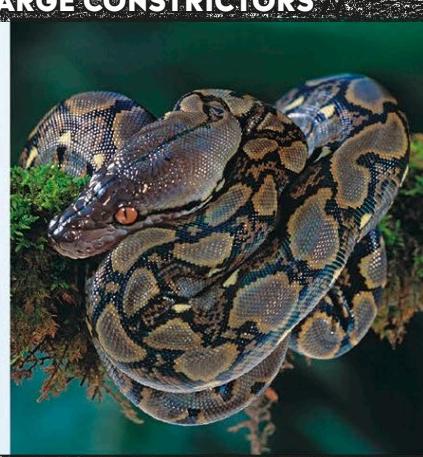
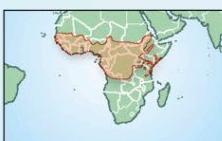
Scaly skin

As it grows, the anaconda needs to shed its scaly skin several times a year, but the pattern of black oval spots on a muddy green background doesn't change.



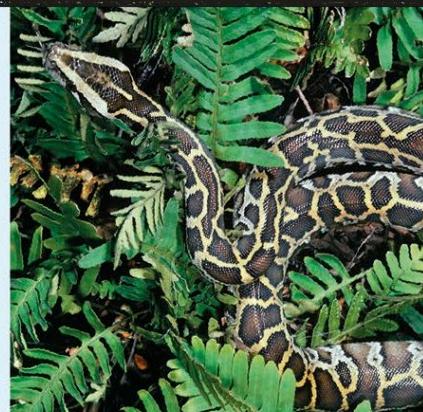
Reticulated python

The green anaconda is the heaviest, but the longest snake is likely to be the reticulated python from Southeast Asia, with recorded lengths of more than 23 ft (7 m).



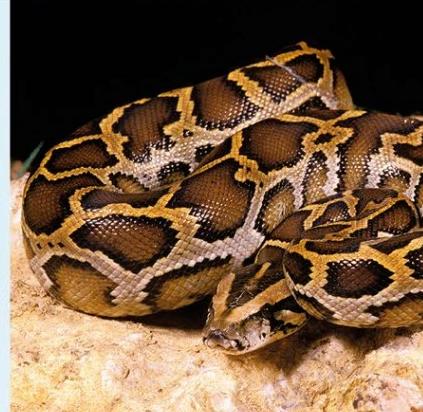
African rock python

The biggest snake in Africa, growing to 20 ft (6 m) long, the African rock python has the strength to prey on large crocodiles.



Burmese python

Weighing around 400 lb (180 kg), the Burmese python from Southeast Asia is the heaviest recorded snake after the green anaconda.



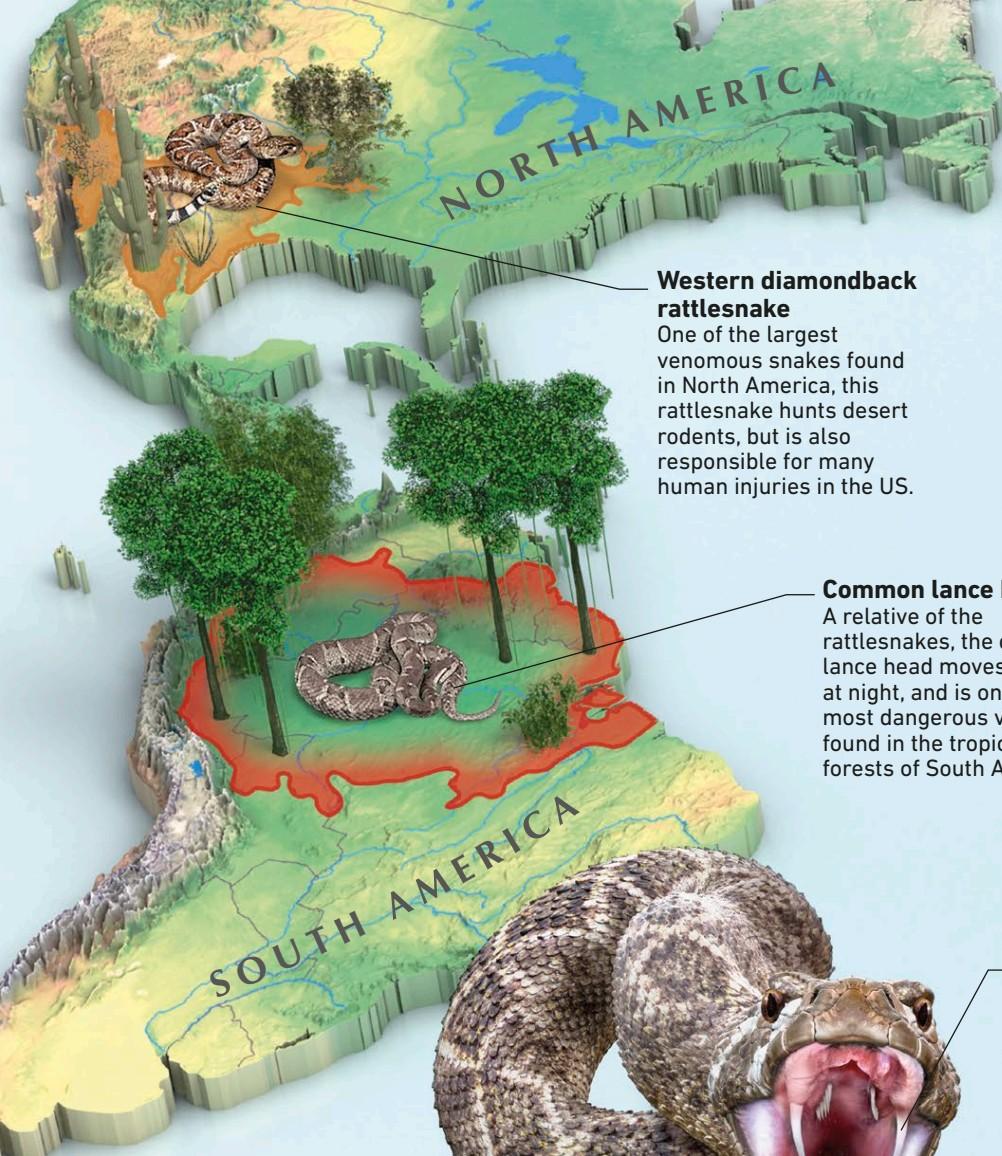
Indian rock python

Only slightly smaller than the Burmese and African rock pythons, this snake swims well and is common in wetlands and forests of India and Sri Lanka.



Amethystine python

Australia's largest snake hunts possums and wallabies, and sometimes slides into human homes. It is also widespread in New Guinea and nearby islands.

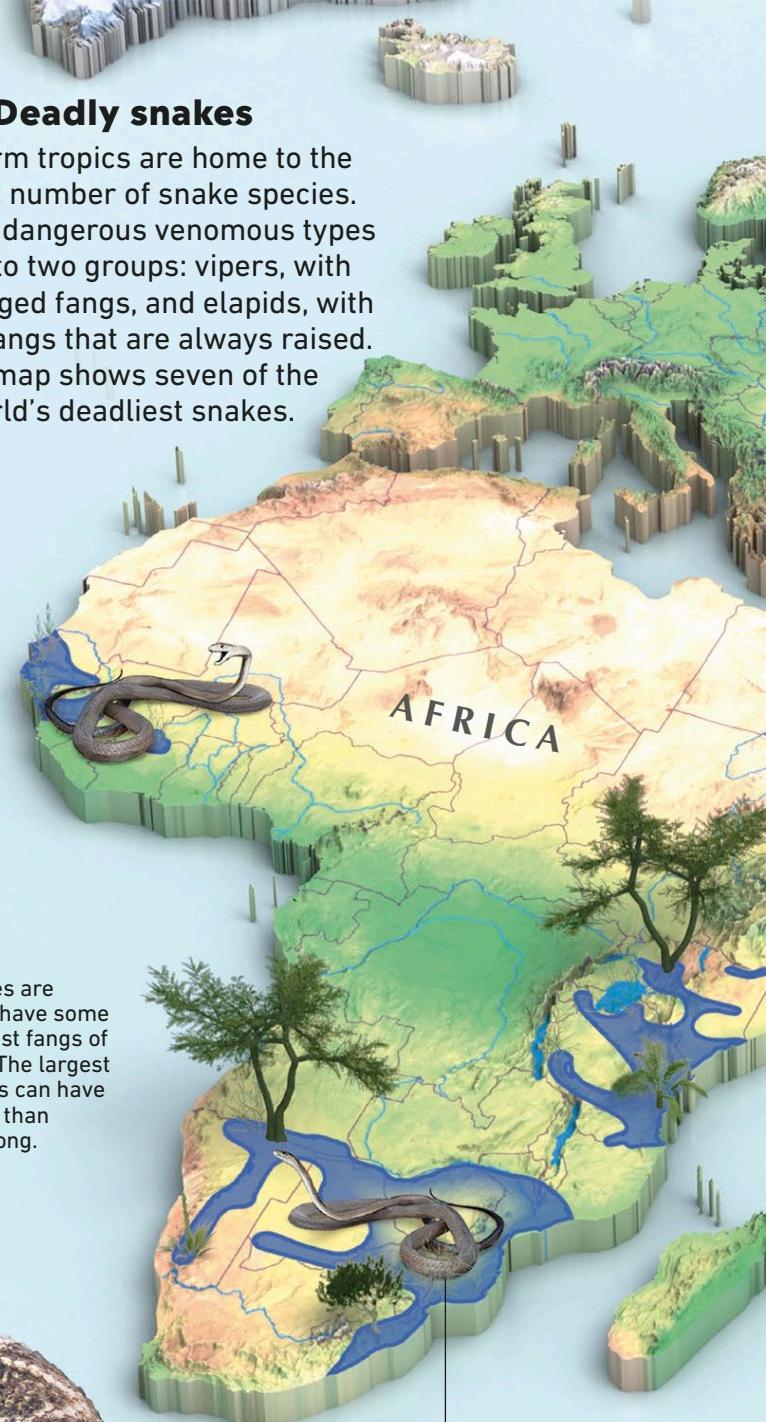


Western diamondback rattlesnake

One of the largest venomous snakes found in North America, this rattlesnake hunts desert rodents, but is also responsible for many human injuries in the US.

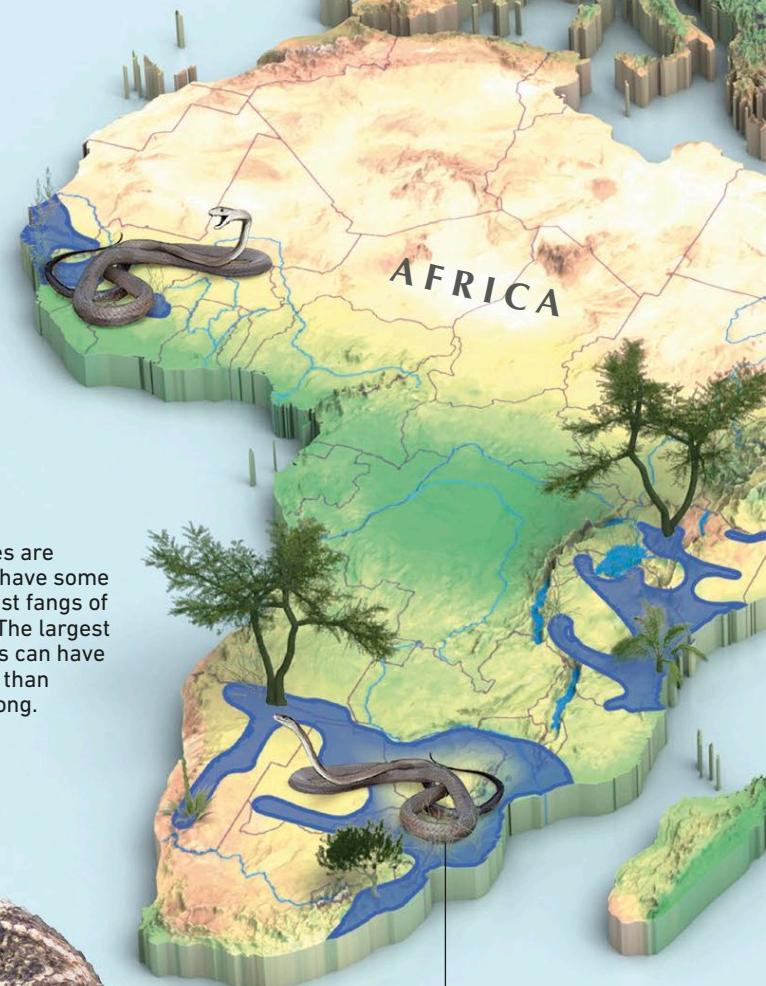


Western diamondback rattlesnake



Common lance head

A relative of the rattlesnakes, the common lance head moves about at night, and is one of the most dangerous vipers found in the tropical forests of South America.



Black mamba

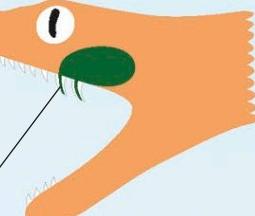
Named for the black lining of its mouth, this elapid is one of the longest and fastest of the venomous snakes in Africa and quickly inflicts multiple dangerous bites.

Snake venom

Venom is a poisonous fluid that flows from glands in the snake's upper jaw. When the snake bites, a muscle squeezes venom out through the fangs. Viper fangs reach further forward than those of elapids.

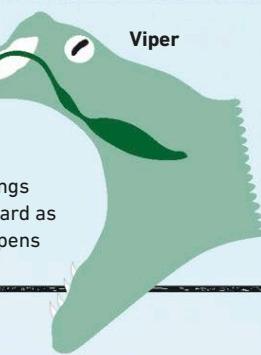
Elapid

Elapids have small, fixed fangs at the back of the jaw



Viper

Viper fangs swing forward as the jaw opens



KEY

- Western diamondback rattlesnake
- Common lance head
- Black mamba
- Saw-scaled viper
- Indian cobra
- Many-banded krait
- Tiger snake

Venomous snakes

There are around 3,850 species of snakes around the world, and about 20 percent of these are venomous. They use their venom to kill their prey—but some also strike in self-defense and, when they do so, some species can be dangerous to humans, such as the ones shown here.

Arabian Peninsula

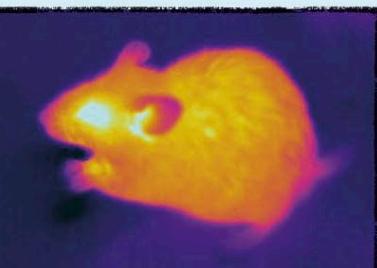
Saw-scaled viper
With a dangerous bite, and often found living close to humans, this snake is probably responsible for more human deaths than any other. Similar saw-scaled vipers occur elsewhere on the Arabian Peninsula and in parts of Africa.

INDIA

Indian cobra
The Indian cobra is an elapid that warns anyone approaching that it will strike in self-defense. It extends ribs close to its neck to produce a flat hood, while rising up to appear bigger.

ASIA

Many-banded krait
Kraits are boldly patterned elapid snakes found across Asia. Living near water, the many-banded krait hides during the day and hunts at night, preying on fish. If surprised, it uses its deadly bite in self-defense.



ABOUT 200 SNAKE SPECIES HAVE VENOM THAT IS HARMFUL TO HUMANS

Hunting by heat

Vipers have an extra sense that helps them locate prey. Heat-sensitive pits on their head allow them to “see” the body heat of warm-blooded animals, in the same way that the mouse shows up against a cold background in this thermal image.

AROUND 138,000 PEOPLE DIE FROM A SNAKE BITE EVERY YEAR



Tiger snake

The tiger snake is one of many highly venomous elapid snakes found in Australia. Individuals vary in color and not all have the stripes that give the species its name.





BIRDS

Bird facts

Evolving from two-legged dinosaurs, the first birds took flight about 140 million years ago. Today, birds are found on every continent and in a diverse range of habitats, from grasslands to deserts. Many birds migrate incredibly long distances to breed or find food.

WHAT IS A BIRD?



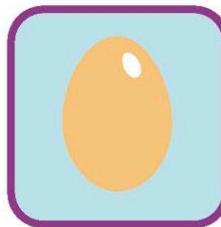
Vertebrates

Birds have thin and lightweight, yet strong, internal skeletons made of bone.



Warm-blooded

From humid rainforests to chilly mountaintops, birds generate and maintain a stable body temperature.



Lay eggs

Birds breed by laying hard eggs, which chicks crack open when ready to hatch.



Most fly

Using their wings, most birds can take to the skies, however some birds are flightless.



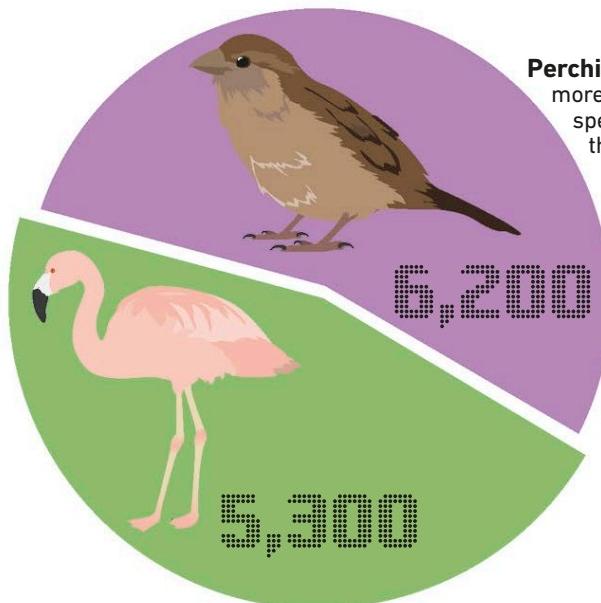
Feathered

Feathers are important for retaining body heat and helping birds fly.

BIRD TYPES

ESTIMATED NUMBER OF BIRD SPECIES:

11,500



Perching birds account for more than half of all bird species. Their feet have three unwebbed toes in the front and one strong, flexible toe on the back, allowing them to perch on tree branches. Found globally, they include sparrows, lyrebirds, and birds of paradise.

Non-perching birds account for all other species. They include a wide range of birds located across the world including parrots, owls, flamingos, and birds of prey, as well as flightless birds, such as ostriches, emus, and penguins.

COLOMBIA HAS OVER 1,850 BIRD SPECIES—MORE THAN ANY OTHER COUNTRY IN THE WORLD.

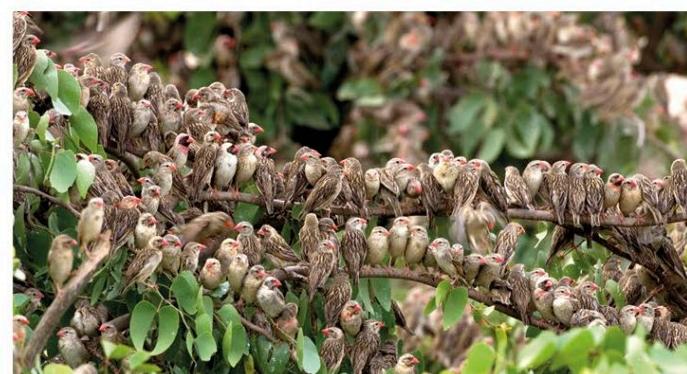


HIBERNATING BIRD

The **common poorwill**, seen here on a roof, is the only bird species known to hibernate. Its diet of insects rapidly declines during winter, so it goes into a state of hibernation for weeks or even months. This bird is found in the grassy areas of North America.

LONGEST MIGRATION

ARCTIC TERNS FLY AN AMAZING **59,650 MILES** (96,000 KM) FROM THEIR BREEDING GROUND IN THE **NORTH ATLANTIC** TO **ANTARCTICA** AND BACK AGAIN.



BIGGEST GATHERING

Flocks of more than 1.5 billion red-billed quelea have been witnessed flying over the African savanna. In such great numbers, this small bird is a constant threat to crop farmers. In fact, it is such a pest, it is often called the "feathered locust."

BILL SHAPES

Over millions of years, birds have evolved many different bill shapes. Here are five of them, each designed to help the bird eat or catch its prey.



Seed-eater

Birds such as crossbills have strong bills for eating seeds. The crossbill can extract seeds from pine cones with its overlapping bill.



Water-sifter

Flamingos have long, wide bills that they sweep from side to side in shallow waters, sifting out animals to eat.



Nectar-gatherer

The pointed bills are designed for precision. Sunbirds' bills also curve downward, which is ideal for extracting flower nectar.



Mud probe

Birds with long, sensitive bills can explore soft mud in search of prey. The snipe looks for snails and small crustaceans.



Butchery tool

This hooked bill, as seen on a golden eagle, is perfect for stripping meat from the bones of fish, birds, or mammals.

THE LARGEST FLYING BIRD IS THE WANDERING ALBATROSS, WITH A WINGSPAN OF 12 FT (3.6 M).



The average female arm span is about 5.2 ft (1.6 m).

BIGGEST BIRD AND EGGS



THE OSTRICH, A FLIGHTLESS BIRD FROM SUB-SAHARAN AFRICA, IS THE WORLD'S TALLEST BIRD.

IT ALSO BEARS THE LARGEST EGGS, UP TO 6 IN (15 CM) LONG—NEARLY THREE TIMES LONGER THAN A HEN'S EGG.

SMALLEST BIRD

THE BEE HUMMINGBIRD IS JUST 2.4 IN (6 CM) LONG. THIS TINY BIRD IS NATIVE TO CUBA.



FASTEST BIRD

Found throughout the world, peregrine falcons are formidable hunters. They swoop in on prey, such as other birds and bats, at a record-breaking speed.

SWOOPING SPEED = 200 MPH (320 KPH)



RÜPELL'S VULTURE

**35,000 FT
(10,670 M)**



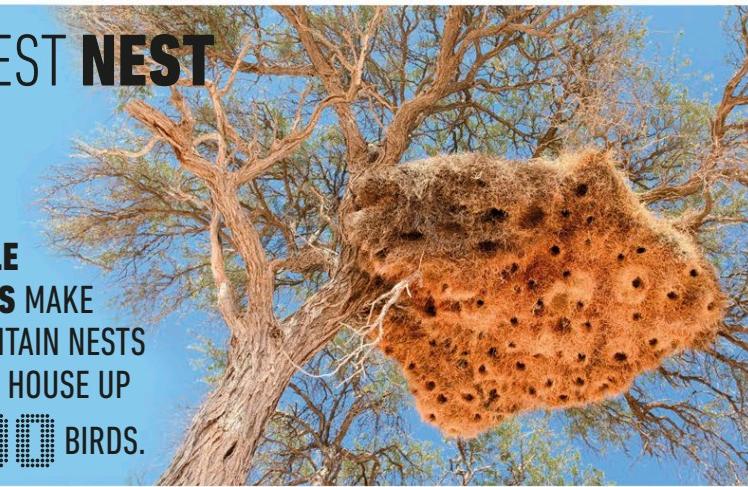
HIGHEST-FLYING BIRD

RÜPELL'S VULTURE CAN REACH AN ALTITUDE OF 37,000 FT (11,280 M), HIGHER THAN THE CRUISING ALTITUDE OF AN AIRPLANE.



BIGGEST NEST

SOCIAL WEAVERS MAKE AND MAINTAIN NESTS THAT CAN HOUSE UP TO 500 BIRDS.



SMART BIRD

Found in the remote Pacific islands after which it is named, the New Caledonian crow can manipulate and use twigs to dig out prey, such as grubs, from trees. These intelligent forest-dwelling birds are the first to be observed making and using tools in this way.



OSTRICH RELATIVES



Rheas

Found on the South American pampas, rheas resemble ostriches, but are smaller, with three-toed feet. Both sexes have brown plumage.



Tinamous

These are chicken-sized birds from tropical American grassland and forest. They are the only close ostrich relatives that can take to the air, but they are weak fliers.



Cassowaries

The largest flightless birds from dense rainforest are found in tropical New Guinea and northeastern Australia. They have blue skin on the head and neck.



Emu

Most closely related to the cassowaries, the emu lives on open grassland and deserts of Australia. Like the ostrich, it is adapted to dry conditions.



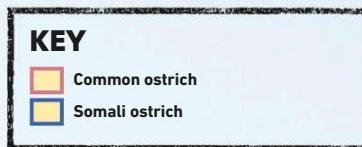
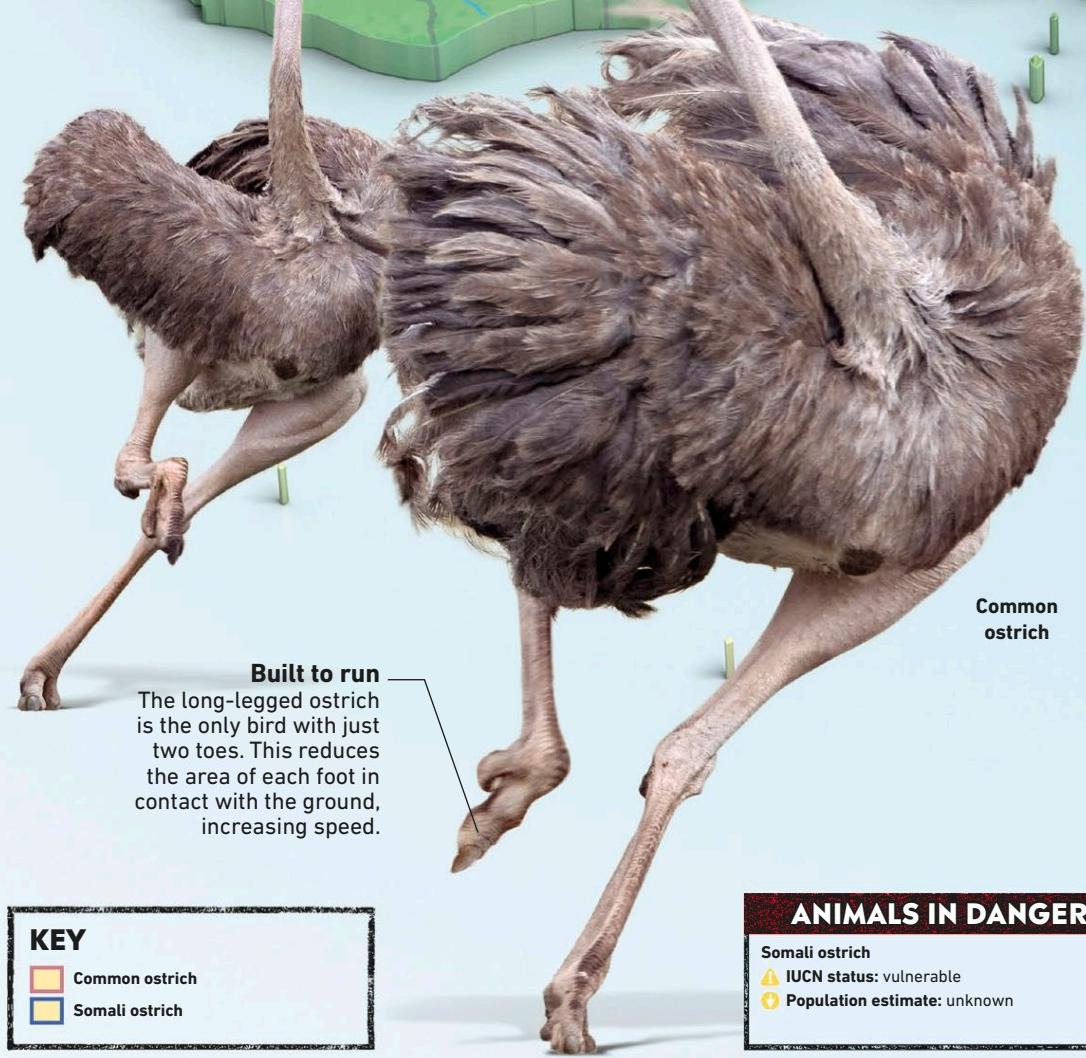
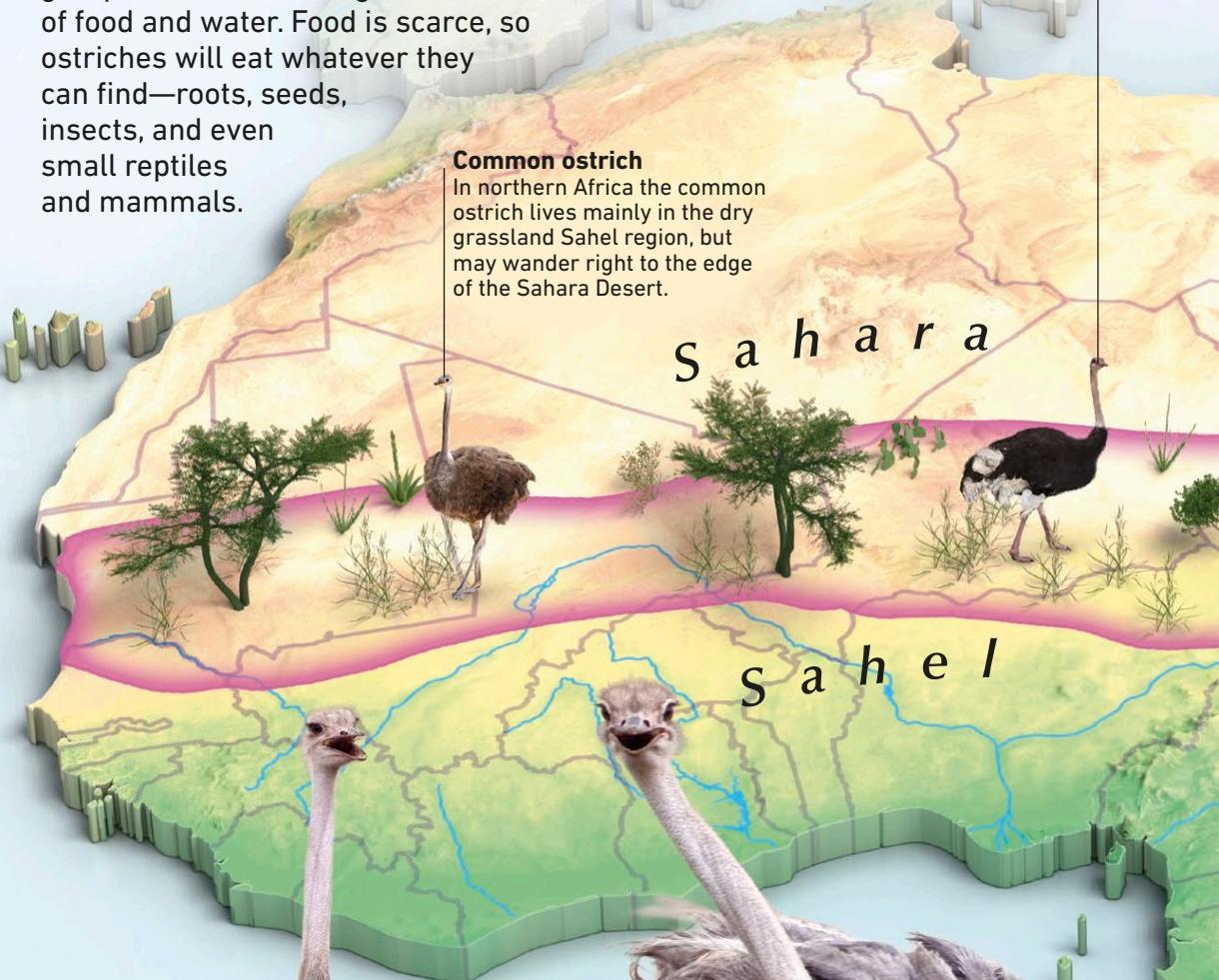
Kiwis

From the forests of New Zealand, the five species of kiwi are the smallest ostrich relatives and have long bills to probe the ground for prey.

Out in the open

Ostriches are at home on open countryside from desert to savanna, where they live in groups and wander long distances in search of food and water. Food is scarce, so ostriches will eat whatever they can find—roots, seeds, insects, and even small reptiles and mammals.

Male ostrich
Male common ostriches have back plumage with white wings and tail and skin. The females are brownish all over.



ANIMALS IN DANGER

Somali ostrich

IUCN status: vulnerable
Population estimate: unknown

Ostriches

Ostrich chicks
All female ostriches in the group lay their eggs in a communal nest, so adults may end up guarding large crèches of chicks.

Congo Basin

AFRICA

Desert dweller
In the southernmost part of their range, common ostriches live in hot, dry desert.

Namib Desert

Kalahari Desert

Great Rift Valley

Somali ostrich
This species lives in the eastern horn of Africa—in Somalia, Ethiopia, and Kenya. Males have a gray head, neck, legs, and feet, and a deeper black plumage than the common ostrich.

Masai region
In the Masai region of east Africa, common ostriches have a reddish-tinge to their neck but are more closely related to the gray-necked ostriches further south.

Rift Valley
The two species of ostrich are separated by the Great Rift Valley (pictured below). On the eastern side, the Somali ostrich has split away from common ostriches and evolved into a separate species.

MALE OSTRICHES STAND UP TO 9 FT (2.7 M) TALL

AT TOP SPEED AN OSTRICH CAN RUN ABOUT 43 MPH (70 KPH)—THAT'S FASTER THAN A RACEHORSE



Changing colors

Each year, thousands of Caribbean flamingos are born in one of the world's largest flamingo colonies, Mexico's Ría Lagartos Biosphere Reserve. The chicks' gray feathers turn pink when they eat shrimp and other invertebrates containing a dye. This bird's population is rising, from the Caribbean to South America.



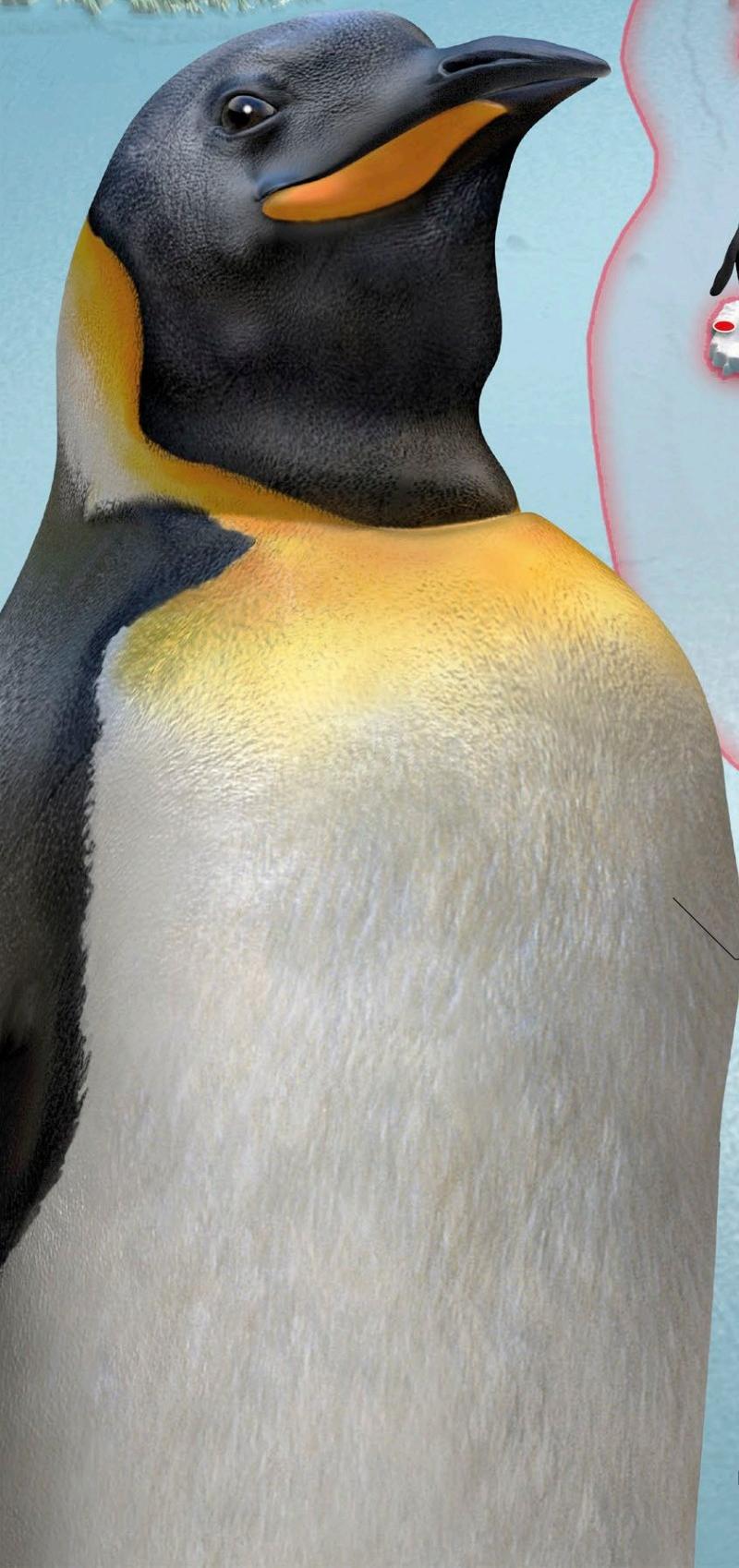
ON ANTARCTIC COASTS THE WINTER WINDS CAN BLOW UP TO 200 MPH (320 KPH)



EMPEROR PENGUINS ARE UNDER THREAT FROM CLIMATE CHANGE, AS RISING TEMPERATURES MELT THE WINTER SEA ICE

KEY

- Breeding site
- Swimming range



SOUTHERN OCEAN

ANTARCTICA

South Pole

Sleek swimmer

The streamlined body of a penguin is superbly adapted for swimming. Underwater, these birds flap their paddle-like wings for propulsion.



Ronne Ice Shelf

Weddell Sea



Contact call

The call of an emperor penguin can be heard more than half a mile (1 km) away. Each bird recognizes the call of its mate, which helps them locate one another in the crowded colony.

Feeding time

Males feed their chick with a special curd produced from their food-pipe, until the mother arrives with fish and krill caught at sea.



Ross Ice Shelf

Ross Sea

Standing tall

Penguins stand very upright because their feet are set far back on the body. The emperor is the tallest of all—up to 4½ ft (1.3 m).

Polar penguin

Emperor penguins feed in the icy waters of the Southern Ocean around Antarctica. They can dive deeper than any other seabird to catch fish and krill. Each year, emperors gather in their thousands at breeding sites around the coast to mate and raise their single chicks.

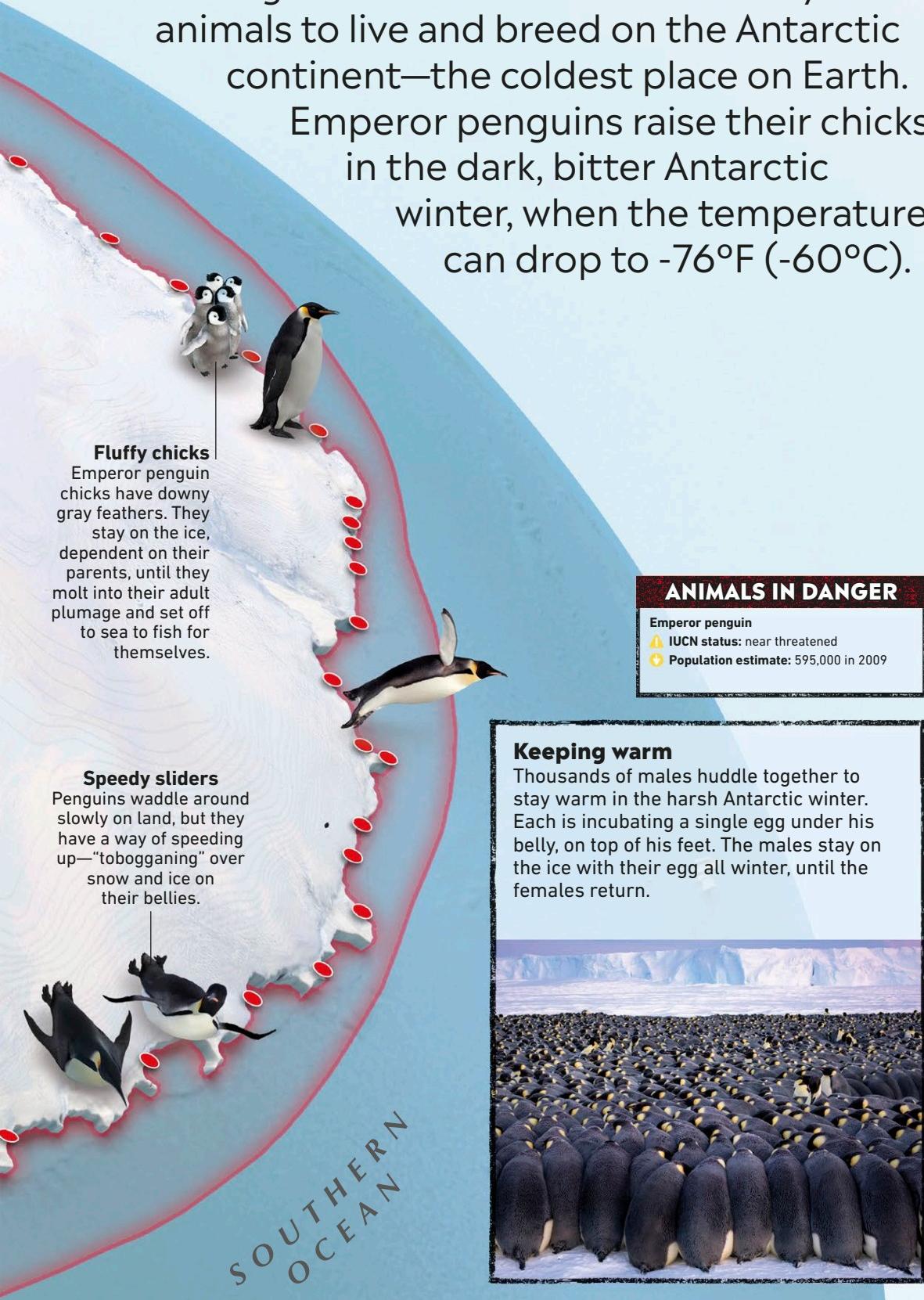
Breeding site

At colonies around the coast, emperors gather to find a mate. The female lays a single egg then returns to the sea, leaving the male to incubate the egg alone.



Emperor penguin

The life of the world's biggest penguin is a story of surviving extremes. It is one of the very few animals to live and breed on the Antarctic continent—the coldest place on Earth. Emperor penguins raise their chicks in the dark, bitter Antarctic winter, when the temperature can drop to -76°F (-60°C).



ANIMALS IN DANGER

Emperor penguin
 IUCN status: near threatened
 Population estimate: 595,000 in 2009

Keeping warm

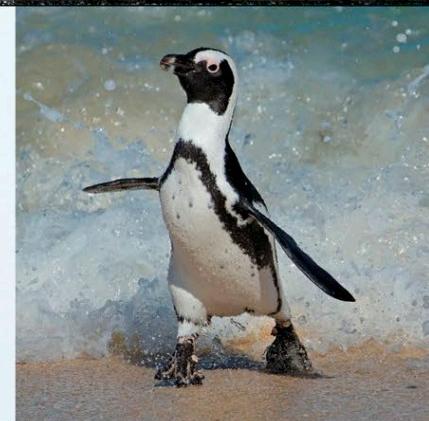
Thousands of males huddle together to stay warm in the harsh Antarctic winter. Each is incubating a single egg under his belly, on top of his feet. The males stay on the ice with their egg all winter, until the females return.



Galápagos penguin
All 18 species of penguin live in the southern hemisphere. The most northerly one lives on the Galápagos Islands at the equator, nesting in crevices in the volcanic rock.



Jackass penguin
The only African penguin nests and feeds mainly on and around offshore islands, but is also sometimes found on the coasts of Namibia and South Africa.



Little penguin
This is the world's smallest penguin, at only 16 in (40 cm) tall. It lives on southern Australian, Tasmanian, and New Zealand coasts, nesting on the dunes.



Macaroni penguin
Like most penguin species, the macaroni penguin lives on islands in the Southern Ocean, between Antarctica and warmer waters further north.



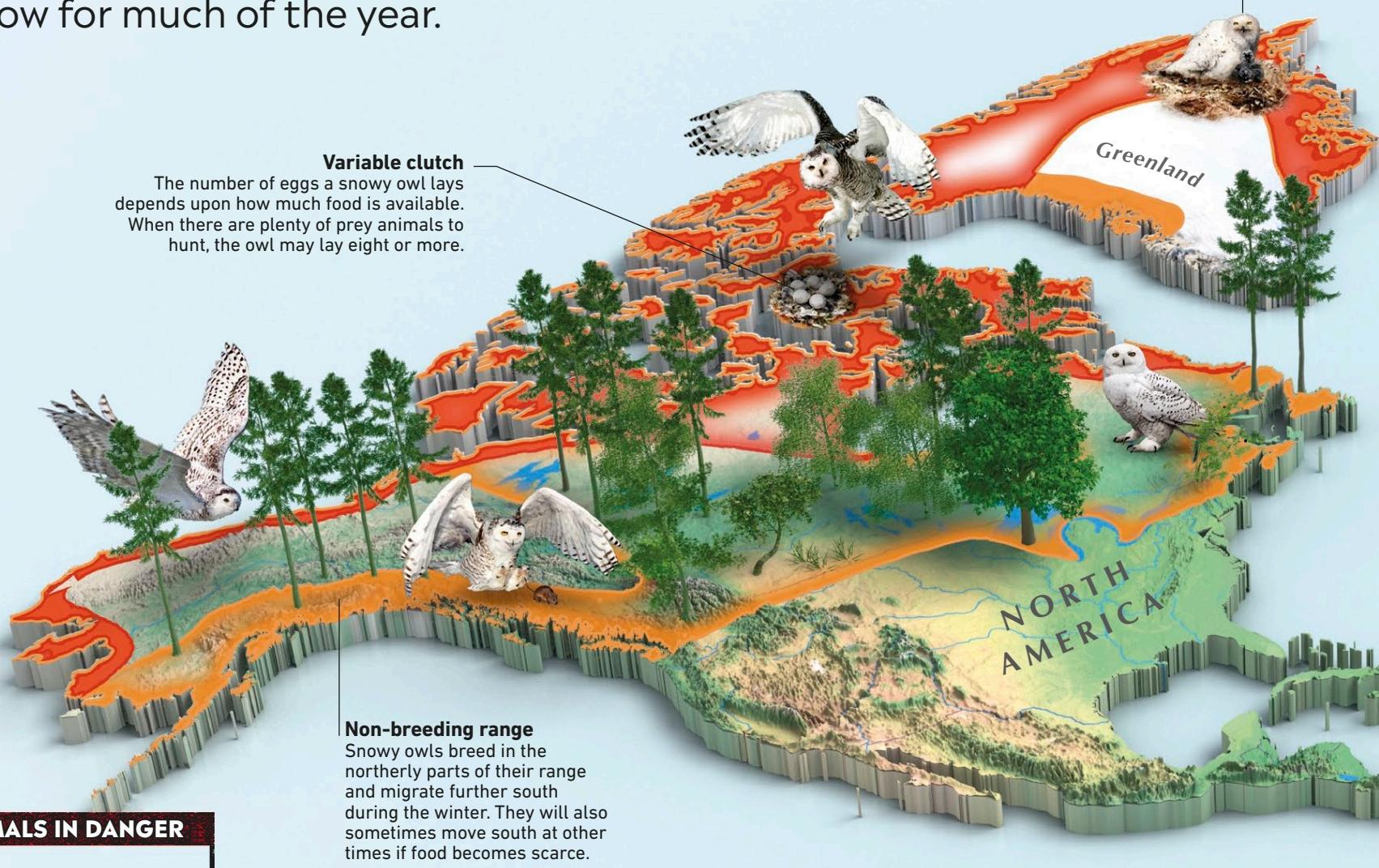
Adélie penguin
The Adélie penguin is the only other penguin species restricted to Antarctica. Unlike the emperor, it breeds on ice-free shores during the summer months.



Snowy owl

Few predatory birds are found as far north as the snowy owl. Many other owl species live in cold northern forests, but only the snowy can survive on the treeless tundra, where the ground is frozen solid and covered in snow for much of the year.

Ground nester
Unlike other owls, the snowy owl must nest on the ground in its open tundra habitat. It chooses an elevated site to give it a view of approaching danger.



ANIMALS IN DANGER

Snowy owl
IUCN status: vulnerable
Population estimate: 28,000

Blending in

The snowy owl is the only owl with an all-white plumage. This helps disguise it against the snowy ground, especially during the Arctic summer when there is almost continuous daylight and the bird is breeding and hunts at all hours.



Hunting

The snowy owl has such good hearing it can detect the position of prey burrowing beneath a blanket of snow. It swallows small rodents whole, but will tear larger animals, such as hares and rabbits, to pieces first.





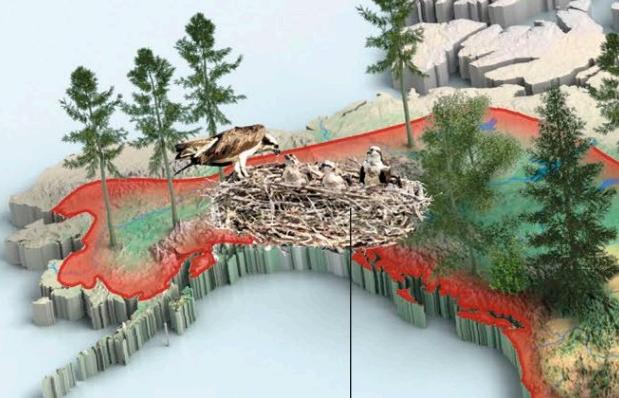
Catching a fish

Ospreys have long, featherless legs to reach into the water, and use their curved talons and spiny foot pads to grip a slippery fish and lift it out of the water. The outer toes twist around so the bird can firmly hold heavy prey with two talons either side.



Sharp beak

Like all birds of prey, the osprey has a hooked beak to tear its prey. Nostrils on the osprey's beak have valves that close to stop water getting in when the bird dives for a catch.



Feeding the chicks

Ospreys build their nests where they can be sure of a good supply of food for their young. In northwest America, they take advantage of the annual Pacific salmon migration, when the fish swim up rivers from the ocean to breed.

Long-distance gliding

Like other large birds of prey, ospreys often rely on rising currents of warm air, called thermals, to carry them as they soar long distances, sometimes even over the open sea.



Poised to grab

The osprey's feet, which are tucked under its body during flight, swing forward before a strike, with claws outstretched ready to grab a fish.

The osprey's range is indicated by a red shaded area across the map of North America and parts of South America. The map also shows green land areas and blue oceans.

Osprey

The osprey is a large, fish-eating bird of prey. Around the world, it lives and breeds near water wherever fish is plentiful—plunging dramatically from the sky with outstretched, taloned feet to grab its swimming prey.

KEY

Osprey range

Worldwide raptor

The osprey is one of the world's most wide-ranging birds. It lives almost everywhere there is water to fish, except for the cold polar regions and the remotest islands. Birds in the northern hemisphere migrate south for the winter, but ospreys around the equator tend to stay in the same place all year round.

Passing through
In the northern parts of their range, ospreys are seasonal visitors, arriving to hunt and breed in spring and summer, before migrating south to avoid the bitter winters.

Breeding pair
Ospreys start breeding at around three years old. Typically, a male mates with a single female, but if he can defend two nests, he might have a second partner.

Year-round residents
In warmer parts of the world, such as southern Asia, some populations of osprey are resident throughout the year and do not migrate.

Smaller birds
The ospreys in Southeast Asia, New Guinea, and Australia are slightly smaller than those in the rest of the world. Some scientists think that they belong to a different species.

Winter visitors
Across sub-Saharan Africa, ospreys are winter visitors, traveling from Europe at the end of the northern summer. Only in Egypt and other parts of northeastern Africa are they resident all year.

Waterside nests
Ospreys nest along the shores of lakes and rivers or by marshes, typically choosing an exposed tree in which to build a platform of sticks before laying a clutch of three eggs. The first-born chicks are the strongest—younger ones may be left to starve if food is scarce.

AN OSPREY CAN CARRY PREY WEIGHING AROUND 2 LB (1 KG)—HALF ITS OWN BODY WEIGHT

AN OSPREY'S WINGSPAN MAY BE UP TO 6 FT (2 M) WIDE

OSPREYS MIGRATING FROM AFRICA TO EUROPE IN SUMMER TRAVEL UP TO 5,000 MILES (8,000 KM)

A committee of vultures

From a rocky peak in the Eastern Rhodope Mountains, Bulgaria, a group of griffon vultures survey their surroundings for food. These large birds of prey are scavengers—they feed on carrion (dead animals). Using their huge wings, they soar on thermal air currents while scanning the ground for fresh carcasses.







Amazonian parrot

The blue-and-yellow macaw is found throughout the Amazon forest. Here, tall trees provide fruit and nuts for feeding, while the trunks of dead palms offer comfortable holes to nest.

This parrot is still common throughout much of the region, but it is becoming threatened by deforestation and the pet trade.

Tools for dining

Like all parrots, the blue-and-yellow macaw is equipped to pick up and crack open hard-shelled nuts. It uses its clawed feet and a very powerful, but sensitive, beak to grasp and break open nuts. Sometimes, one macaw may try to steal the seed from another.



Blue-and-yellow macaw

This spectacular bird is one of the biggest of the world's 405 parrot species. The blue-and-yellow macaw flies in noisy flocks over the canopy of the world's largest forest, the Amazon, which covers much of northern South America.

BLUE-AND-YELLOW MACAWS ARE NOT ENDANGERED, BUT THEIR NUMBERS ARE DECLINING DUE TO SHRINKING HABITATS

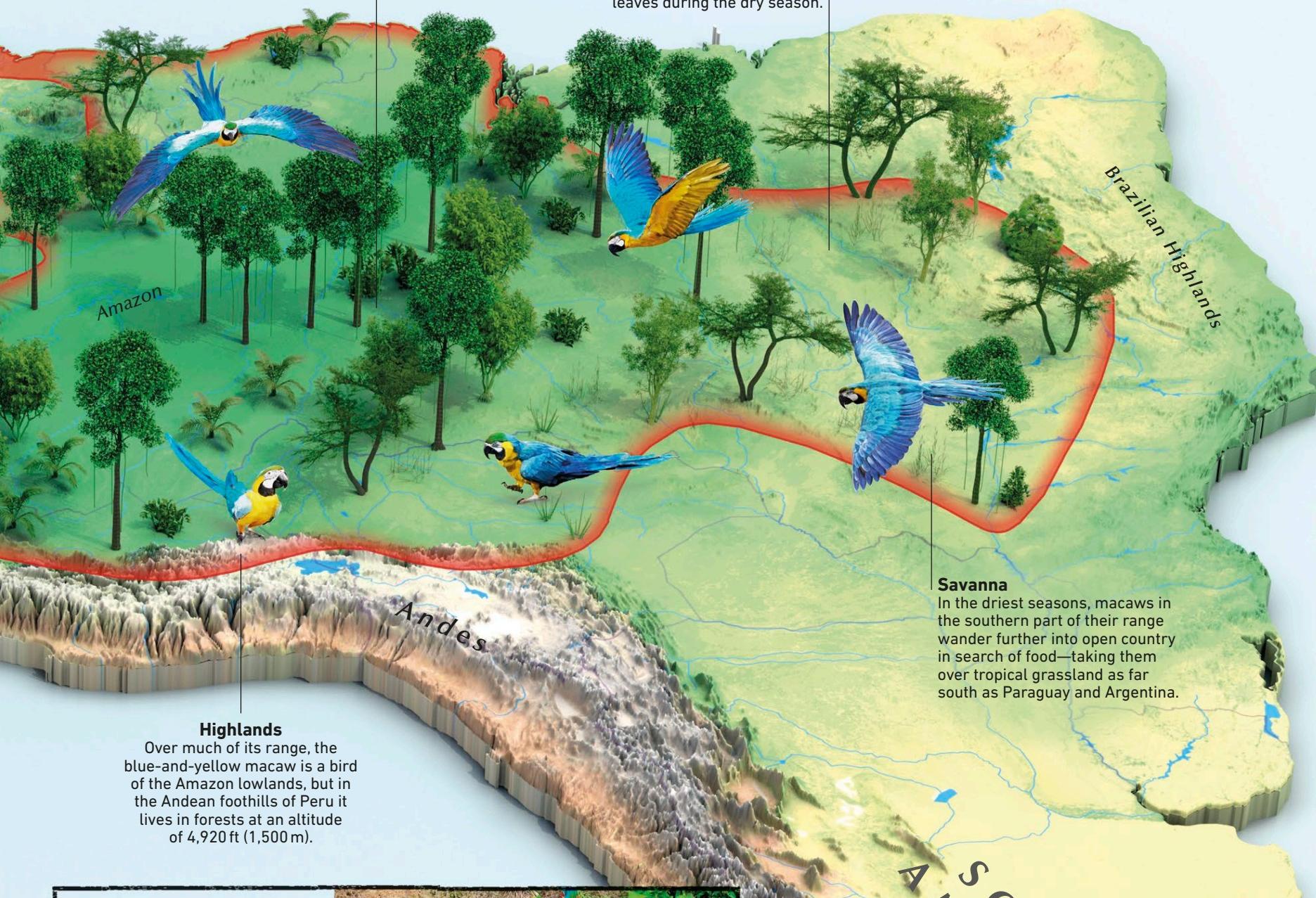


MACAWS ARE HIGHLY PRIZED AS PETS, LEADING POACHERS TO TARGET THESE BIRDS AND SELL THEM ILLEGALLY

Flooded forests

In the central Amazon, the blue-and-yellow macaw lives in a type of forest called várzea.

This region gets flooded during the rainy season, but the birds can stay feeding in the canopy high above the rising waters.



Highlands

Over much of its range, the blue-and-yellow macaw is a bird of the Amazon lowlands, but in the Andean foothills of Peru it lives in forests at an altitude of 4,920 ft (1,500 m).

Salt lick

Salt is scarce in the rainy Amazon rainforest, so macaws and other animals are attracted to exposed mineral-rich mud banks. Here they nibble the clay, which supplies much of the salt and other nutrients that keep them healthy. Macaws and other parrots are among the few kinds of birds to participate in this unusual feeding behavior.



Dry forests

In some parts of its range, the blue-and-yellow macaw lives in woodlands very different from the wet rainforest. Here, the trees are deciduous and lose their leaves during the dry season.

KEY

■ Blue-and-yellow macaw range

Crossing the globe

Barn swallows are found across much of the world, and each year most cross the equator in their migrations—between North and South America or the wildest stretches of Asia. Swallows from Europe even travel across Africa's Sahara Desert to reach their wintering grounds.

North America
Barn swallows in North America breed from May to August. The swallows here—like those in far eastern Siberia—have reddish-brown, rather than pure white, underparts.

Caribbean passage
Swallows migrating south from North America either island-hop through the Caribbean, or follow the path of land through Central America.

South America
Barn swallows arriving in South America reach Colombia and the Guianas by late August, and Brazil, Paraguay, and Argentina by September.

Africa
Barn swallows overwinter across vast regions of Africa: birds arriving from western Europe tend to head to the west, and those from eastern Europe to the east. The longest distance traveled between Europe and Africa is an incredible 7,245 miles (11,660 km).

Europe
Throughout summer, barn swallows breed across Europe, and as far south as northern Africa. Most of those from northern and central Europe start their migration south in September or October.

Barn swallow

More than half of all bird species are small perching birds, or passerines. Many are expert at hunting insects on the wing. Barn swallows nest and raise their young in the northern summers, when the skies are buzzing with life. But they must migrate to the warmer tropics before winter comes and insect numbers fall.



KEY

- Barn swallow range (breeding and resident)
- Barn swallow range (nonbreeding)
- North American migration
- European and Western Asian migration
- Central and East Asian migration

Wide bill
The bill is short and flat, but can open wide to scoop up insects in flight, or collect mud to make nests.

Nesting

Many barn swallows attach their mud nests to the walls of buildings such as houses or barns, hence their name. They often line their nests with grasses or feathers, the whole construction taking about ten days to complete.

**Western Asia**

To the east, the barn swallow's range extends across Central Asia and Russia. Most of these birds will overwinter in southern Asia.

Forked tail

For controlled flight, the long tail spreads wide to help the barn swallow slow down.

India

Most barn swallows seen in India are winter visitors only, but further north of this country—and in a few other warmer parts of the world—they may be resident all year.

Eastern Asia

In this part of the world, swallows breed from the Himalayas to Japan. The birds here have creamy-white underparts, but those in far-eastern Siberia have reddish underparts, like those in the Americas.

Australia

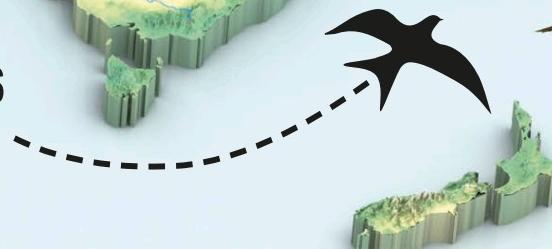
Barn swallows breeding in eastern Asia typically overwinter in Southeast Asia, but during the twentieth century started migrating further into Australia.

Hunting for flies

Barn swallows use their long, pointed wings to maneuver themselves in flight. Flying up to 25 mph (40 kph), these acrobatic birds can turn quickly to snap up insects with a wide open beak.



THESE EXPERT NAVIGATORS CAN COVER MORE THAN 200 MILES (320 KM) IN A SINGLE DAY





A close-up, high-contrast black and white photograph showing the distinct, parallel stripes of a zebra's coat. The stripes are thick and dark, creating a strong visual pattern against a lighter, textured background.

MAMMALS

Mammal facts

The first mammals evolved 220 million years ago, when dinosaurs dominated the Earth. Today, mammals have adapted to live almost everywhere and are spread all over the world, from grasslands and rainforests to icy poles and deep oceans.

WHAT IS A MAMMAL?



Vertebrates

Although they may look different, all mammals have an internal skeleton that is made of bone.



Warm-blooded

Mammals maintain a stable body temperature, whether they are in a hot or cold environment.



Live young

Most mammals give birth to live young, rather than hatching from eggs like birds.



Drink milk

Young mammals feed on milk from their mother, which provides vital nutrients for their growth.



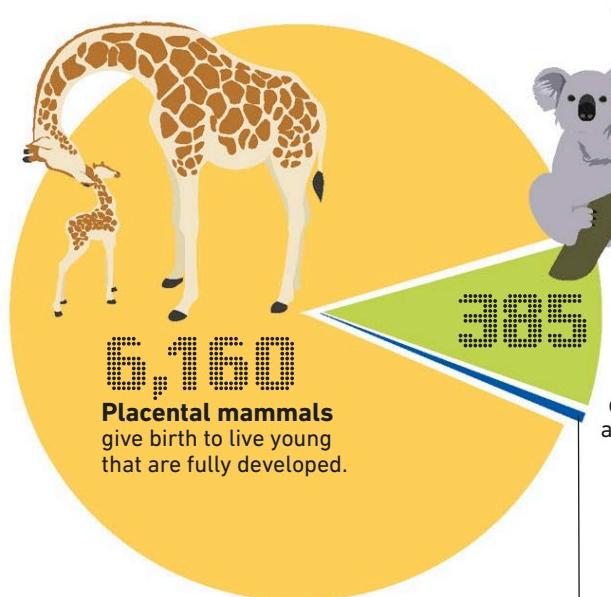
Hair

Mammals have fur, spines, or scales to trap heat. Marine mammals have insulating blubber.

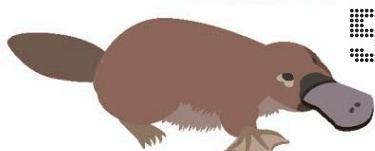
MAMMAL TYPES

ESTIMATED NUMBER OF MAMMAL SPECIES:

6,550



Marsupials give birth to tiny young that usually develop in a pouch.



Monotremes lay eggs. After the baby hatches, it lives in its mother's pouch for several weeks as it continues to develop.

THE TAILLESS TENREC OF MADAGASCAR CAN HAVE UP TO 32 BABIES IN ONE LITTER.



EXTREME HABITATS

Some hardy mammals have adapted to survive in extremely hot, cold, or rather odd places.



Musk oxen use their hooves to dig through snow and find edible plants in temperatures below freezing. They live mainly in the tundra regions of Greenland and Arctic North America.



Kangaroo rats have adapted to live in the extreme heat of the deserts in the western US and Mexico. This rodent does not drink water, instead getting moisture from desert grass seeds.

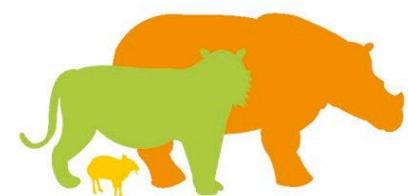


Goats can grip tiny crevices with their hooves, allowing them to ascend a vertical cliff safely. These rock-climbing goats are in Greece, but this mammal can be found all over the world.

INDONESIA IS HOME TO

291 MAMMAL SPECIES

MORE THAN ANY OTHER COUNTRY.



BIGGEST MAMMAL



FASTEST MAMMALS

Whether on water, land, or in the air, these mammals are some of the fastest in the animal kingdom.

IN WATER: ORCA AT **55 MPH** (88 KPH)



ON LAND: CHEETAH AT **70 MPH** (113 KPH)

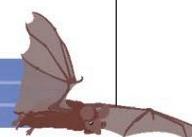


IN THE AIR: BRAZILIAN FREE-TAILED BAT AT **100 MPH** (160 KPH)

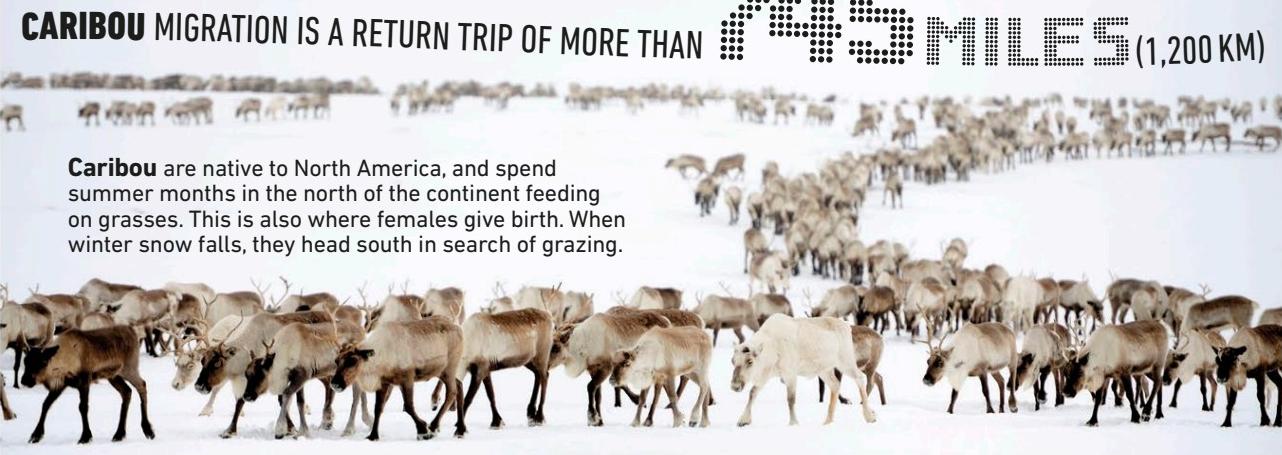


ITS HEAD-BODY LENGTH IS UP TO **1 3/8 IN** (34 MM)—TWICE AS LONG AS A BUMBLEBEE.

This speedy bat is found in parts of North, Central, and South America.



LONGEST OVERLAND MIGRATION



SMART MAMMALS

Bottlenose dolphins in Shark Bay, Australia, use protective marine sponges (an invertebrate) to disturb sandy seafloors filled with potential prey, such as spookhead grubfish. It is thought that only females do this, and they pass on this useful fishing skill to their daughters.



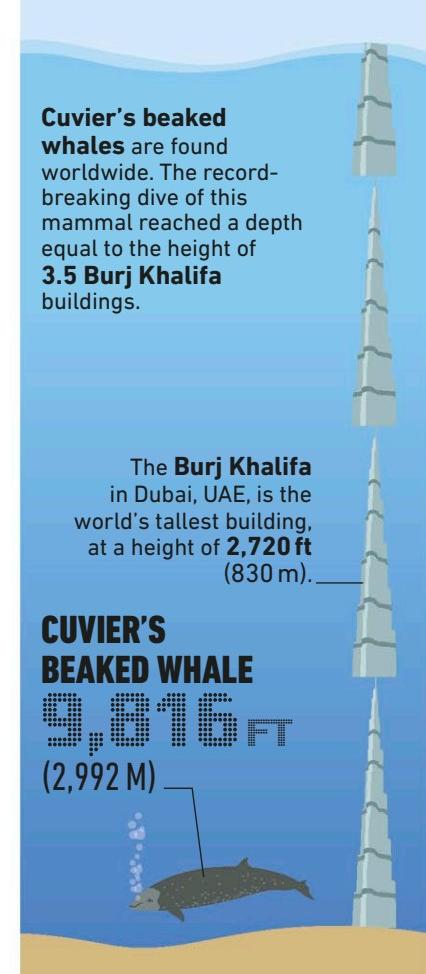
LONG JUMPER
WHITE-HANDED GIBBONS OF SOUTHEAST ASIA CAN JUMP **40 FT** (12 M) FROM BRANCH TO BRANCH.

DEEPEST DIVE

Cuvier's beaked whales are found worldwide. The record-breaking dive of this mammal reached a depth equal to the height of **3.5 Burj Khalifa** buildings.

The **Burj Khalifa** in Dubai, UAE, is the world's tallest building, at a height of **2,720 ft** (830 m).

CUVIER'S BEAKED WHALE
9,816 FT
(2,992 M)



Egg-laying mammals

Some mammals lay eggs instead of giving birth to live young. These are the monotremes, found only in Australia and the island of New Guinea. They include the duck-billed platypus and four species of spiny-coated echidnas.



Eastern long-beaked echidna

Spiny coat

An echidna's coat is made up of protective spines interspersed with fur. If threatened, the echidna can roll into a spiky ball.



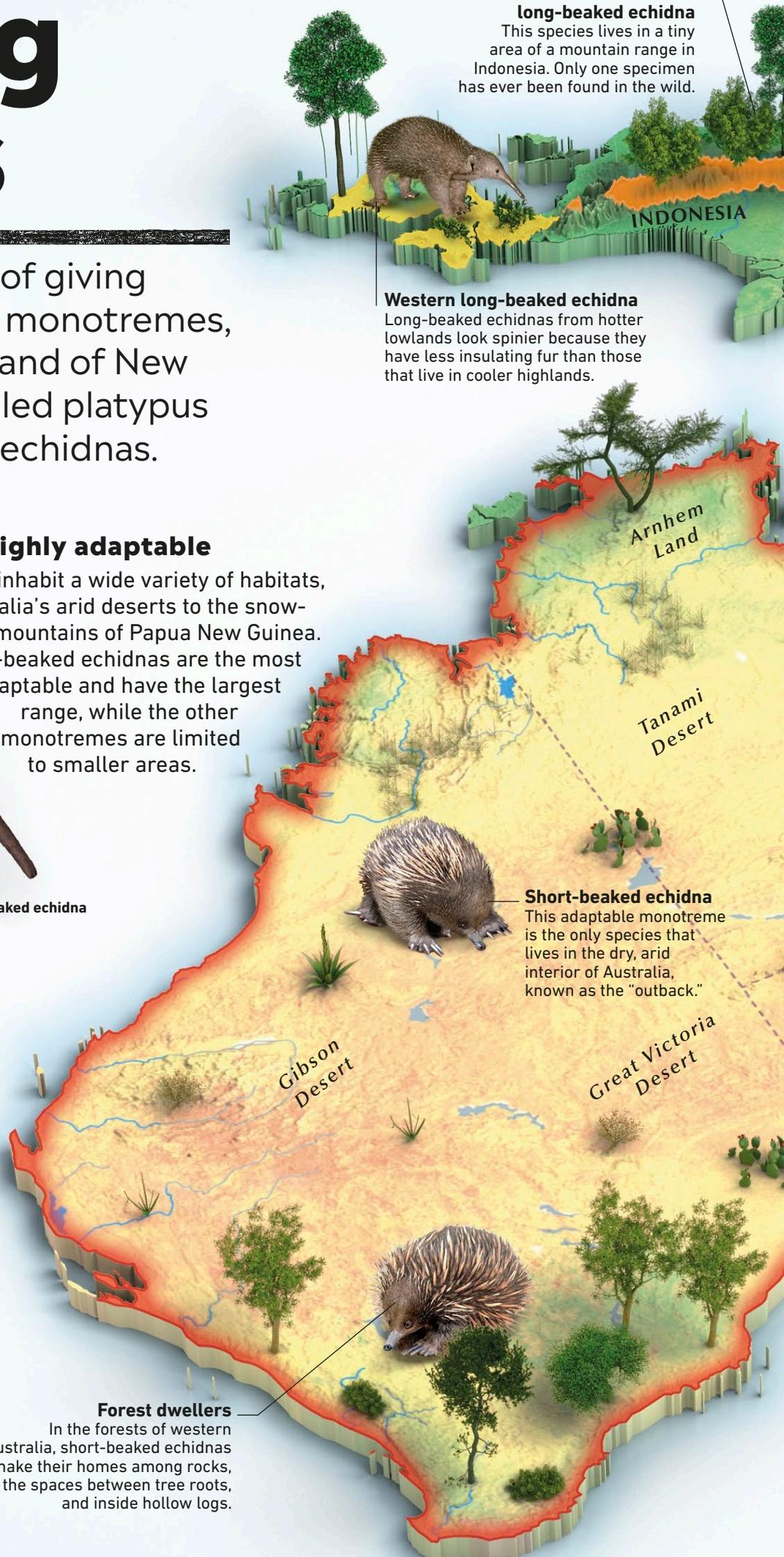
Toothless feeding

All monotremes lack teeth, and instead have sensitive beaks for catching invertebrate prey. Echidnas dig through soil with sharp claws to expose prey and use their long, sticky tongue to trap them. The platypus uses its sensitive bill to find shellfish buried in the mud, then crushes them with horny plates inside its bill.

Highly adaptable

Monotremes inhabit a wide variety of habitats, from Australia's arid deserts to the snow-covered mountains of Papua New Guinea.

Short-beaked echidnas are the most adaptable and have the largest range, while the other monotremes are limited to smaller areas.



PAPUA NEW GUINEA

Eastern long-beaked echidna
These thick-furred, long-beaked echidnas from central and eastern Papua New Guinea live in mountain forests and alpine grasslands.

Cape York Peninsula

Gulf of Carpentaria

A U S T R A L I A

Platypus
The platypus needs wetter habitats than those of short-beaked echidnas, so it is confined to the eastern forests where there is open water to swim and feed.

Leathery eggs
All monotreme eggs are small and leathery. The platypus lays two grape-sized eggs at a time, while echidnas produce just one. Upon hatching, the babies are then fed with milk, just like all other mammals.

ANIMALS IN DANGER
⚠ The IUCN lists Sir David's long-beaked echidna and the western long-beaked echidna as critically endangered, while the eastern long-beaked echidna is vulnerable and the platypus is near threatened. All of their populations are declining.

Beaver-like tail
All monotremes can swim, but the platypus is especially well adapted—with a flat tail for maneuvering and webbed feet for paddling.

Platypus

KEY

- Short-beaked echidna
- Western long-beaked echidna
- Eastern long-beaked echidna
- Platypus

Note: the range of Sir David's long-beaked echidna is not visible at this scale.

Coping with cold
In Tasmania—one of the coldest parts of Australia—the platypus stays active even in winter, but the short-beaked echidna spends the winter in hibernation.

MALE PLATYPUSES HAVE VENOMOUS SPURS ON THEIR HIND LIMBS

**KOALAS
SLEEP
UP TO**

**200
HOURS
EACH
DAY**

ANIMALS IN DANGER

Koala
IUCN status: vulnerable
Population estimate: 100,000–500,000

KEY

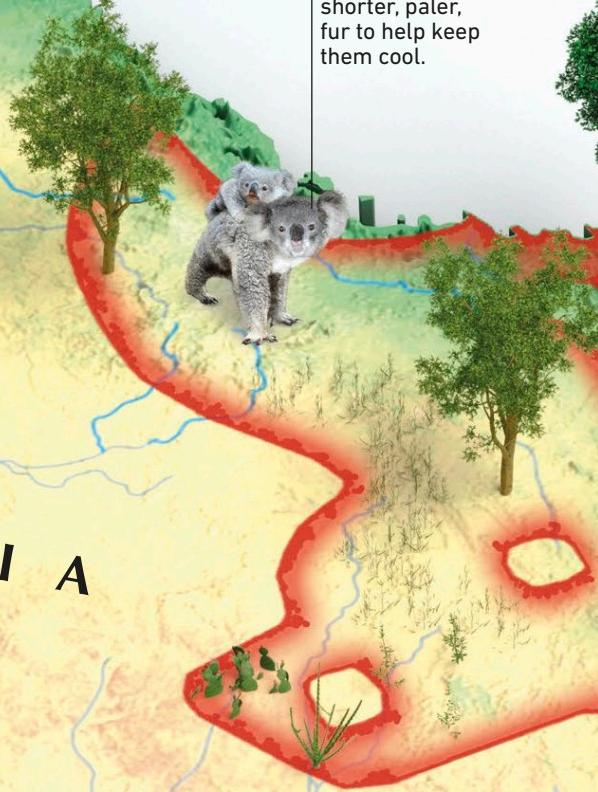
Koala range

Keeping cool
In northeastern Australia, where the climate is very hot, koalas have shorter, paler, fur to help keep them cool.

Facing forward
The koala is the only marsupial with forward-facing eyes. This makes it a better judge of distance, which is important for clambering through branches without falling.

Gulf of
Carpentaria

A U S T R A L I A



Following eucalyptus

Though koalas are found in a range of habitats, from subtropical forests to grasslands and savannas, their range is dependent on the presence of eucalyptus trees, the leaves of which make up the large majority of their diet. Much of their habitat has been lost due to logging, forest clearing, and bushfires, putting many koala populations at risk of extinction.

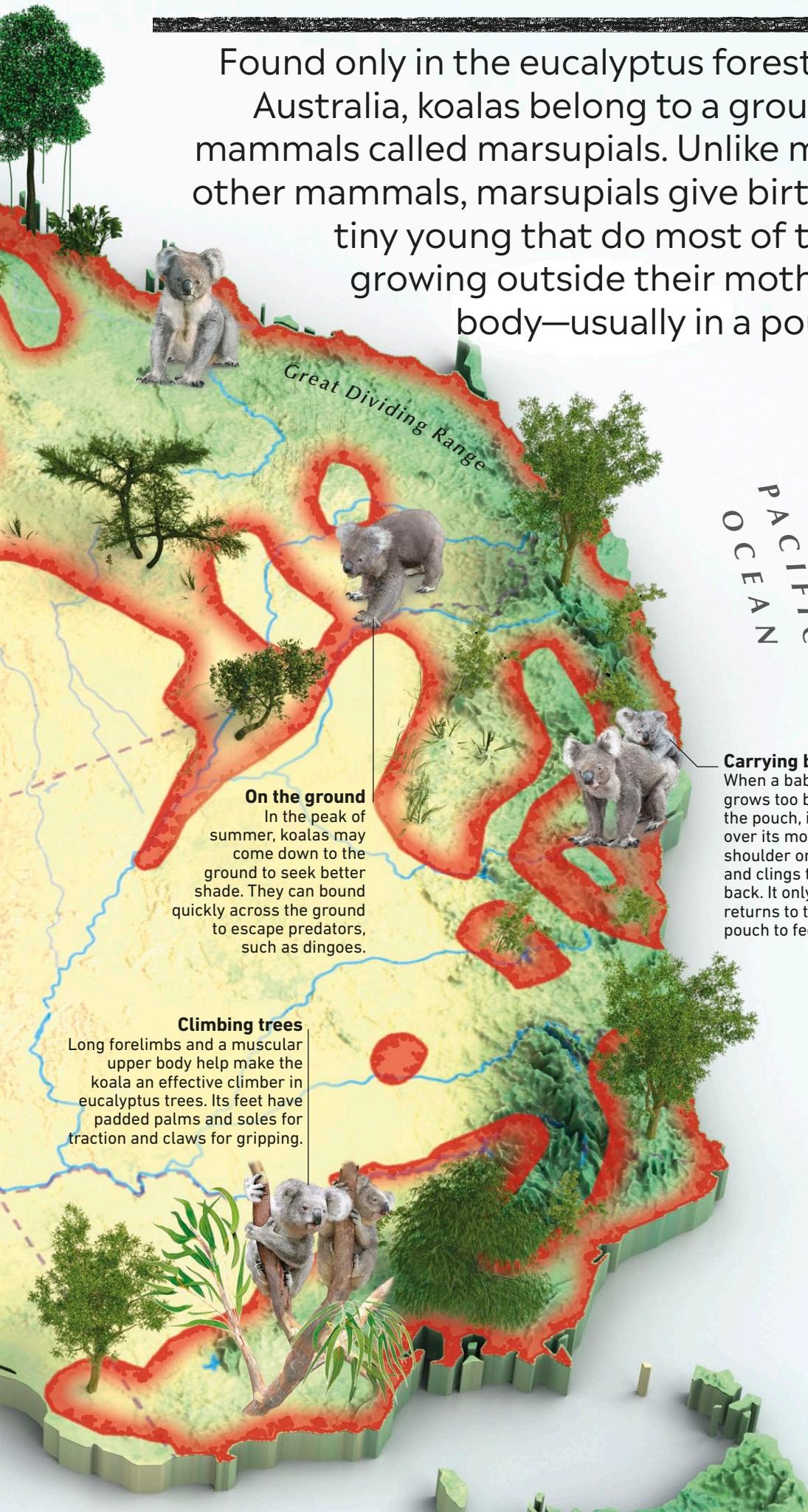
Tough digestion

The leaves of eucalyptus are hard and fibrous, making them very difficult to digest. They quickly fill the stomach of a browsing koala, but provide little nutrition, meaning that when they are not eating or sleeping, koalas spend their time resting to conserve energy.



Koala

Found only in the eucalyptus forests of Australia, koalas belong to a group of mammals called marsupials. Unlike most other mammals, marsupials give birth to tiny young that do most of their growing outside their mother's body—usually in a pouch.



Red kangaroo
The largest species of kangaroo is well adapted to cope with Australia's dry interior, and ranges widely over the semi-deserts of the country.



Goodfellow's tree kangaroo
In the tropical rainforests of New Guinea, Goodfellow's tree kangaroos have evolved to climb through the branches.



Virginia opossum
There are 120 species of opossums, mostly found in tropical South and Central America. Only the Virginia opossum ranges into temperate North America.

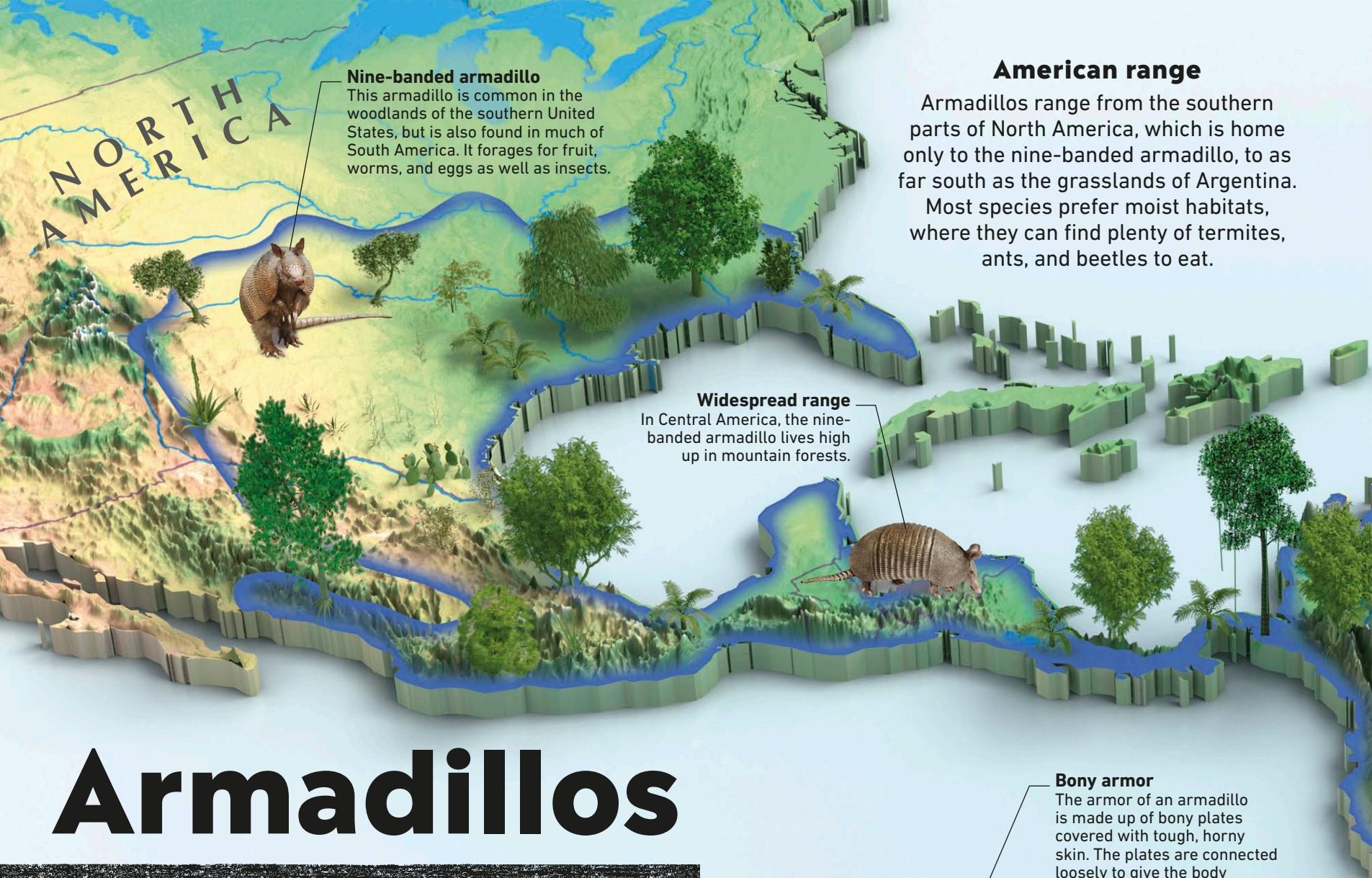


Tasmanian devil
The carnivorous Tasmanian devil used to be widespread across all of Australia, but is now restricted to the southern island of Tasmania.



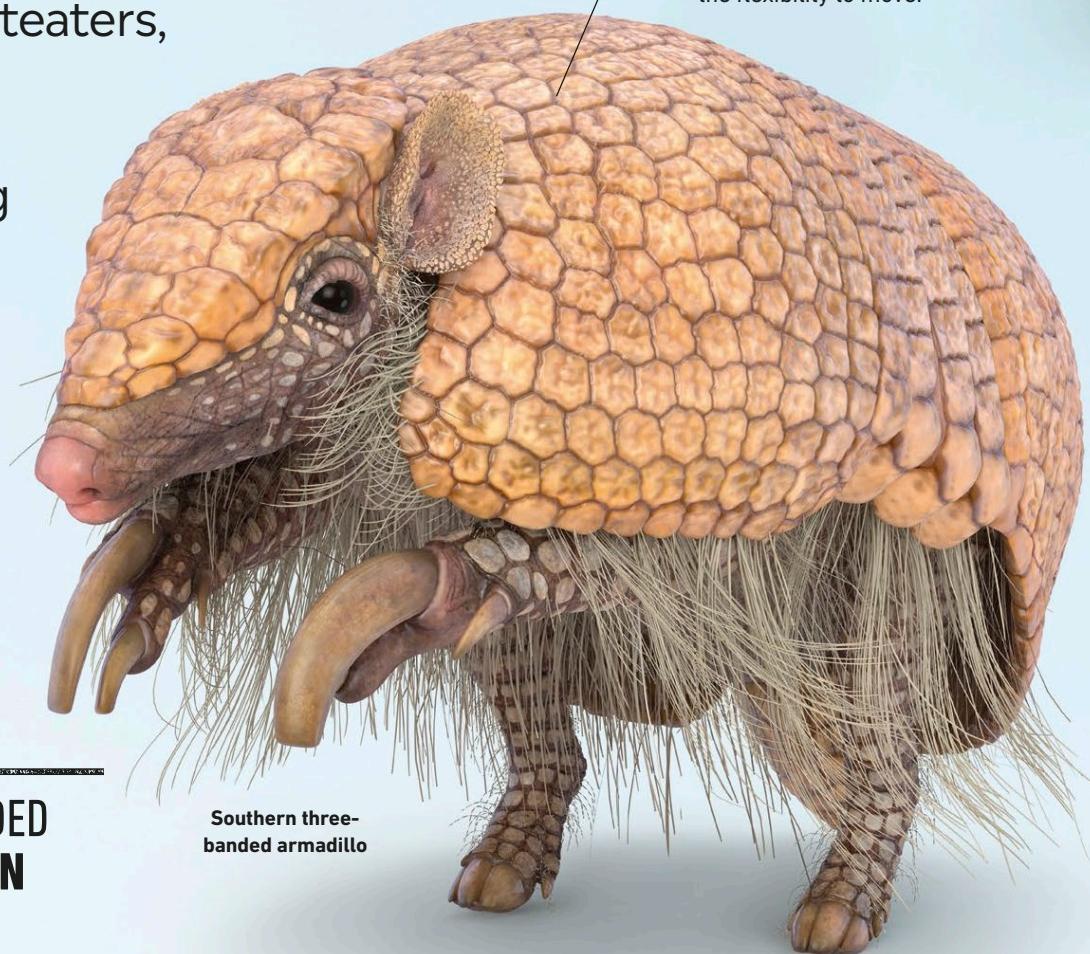
Bear cuscus
Living in tropical lowland forests on the Indonesian island of Sulawesi, the bear cuscus is the most western-dwelling marsupial in Australasia and Oceania.





Armadillos

Closely related to sloths and anteaters, these armored mammals are found only in the Americas and nowhere else. Of the 21 existing armadillo species, five are shown here. They are the only mammals with bony armor, and they use their heightened sense of smell and long, sticky tongue to catch insects and other small animals.



WHEN STARTLED, THE NINE-BANDED ARMADILLO MAY JUMP MORE THAN 3 FT (1 M) INTO THE AIR

Nine-banded armadillo

This armadillo is common in the woodlands of the southern United States, but is also found in much of South America. It forages for fruit, worms, and eggs as well as insects.

American range

Armadillos range from the southern parts of North America, which is home only to the nine-banded armadillo, to as far south as the grasslands of Argentina.

Most species prefer moist habitats, where they can find plenty of termites, ants, and beetles to eat.

Widespread range

In Central America, the nine-banded armadillo lives high up in mountain forests.

Bony armor

The armor of an armadillo is made up of bony plates covered with tough, horny skin. The plates are connected loosely to give the body the flexibility to move.

Southern three-banded armadillo

KEY

Nine-banded armadillo
Giant armadillo

Hairy long-nosed armadillo
Southern three-banded armadillo
Pink fairy armadillo

ANIMALS IN DANGER**Southern three-banded armadillo**

IUCN status: near threatened

Population estimate: unknown

Giant armadillo

IUCN status: vulnerable

Population estimate: unknown

Burrowing down

All armadillos are burrowers, and use their strong clawed feet to dig tunnels with sleeping chambers. Most species spend much of the day in their burrows to avoid the heat of the sun or to hide from large predators, such as pumas.

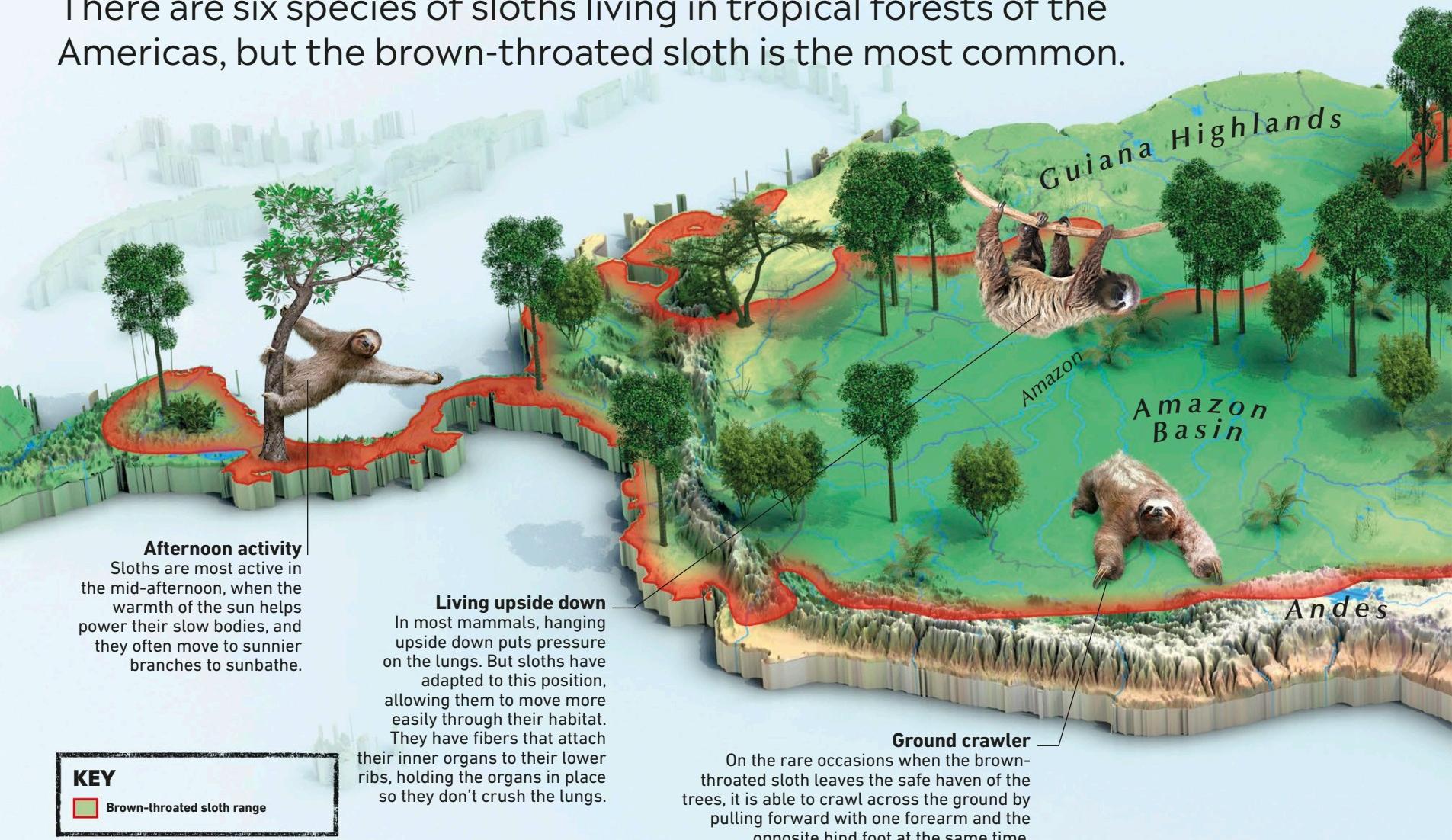
**Giant armadillo**

The Amazon Basin is home to the biggest species of armadillo. The 130-lb (60-kg) giant armadillo lives in undisturbed tropical forests. It is hunted for its meat and threatened by deforestation.

ATLANTIC OCEAN

Brown-throated sloth

Few animals are so tied to life in trees as the sloth. These plant-eaters climb the branches with slow, deliberate movements and have long arms and claws that act as grappling hooks. There are six species of sloths living in tropical forests of the Americas, but the brown-throated sloth is the most common.



KEY

Brown-throated sloth range

Trips to the toilet

The brown-throated sloth descends from the trees for just one reason: to poo. Once a week, it makes its way down to the forest floor, digs a small depression with its short tail, and defecates. It then covers the dung with leaf litter and climbs back up. If forced to do so, a sloth can crawl along the ground using the soles of its front and back feet, but will soon make for the nearest tree to return to the safety of the canopy.



Living together

Algae that grow on the fur of the brown-throated sloth tinge its fur green, helping disguise it among the leaves. The algae are fertilized by the droppings of a species of moth that lives only in the sloth's fur. When the sloth descends to the ground to poo, the moths briefly leave the sloth's fur to lay their eggs, and their larvae feed on the dung.





**SLOTHS SLEEP
FOR UP TO 18
HOURS PER DAY**

**IT CAN TAKE AS MANY AS
50 DAYS FOR A SLOTH
TO DIGEST EACH MEAL**

**THE BROWN-THROATED
SLOTH MOVES ONLY AROUND
130 FT (40 M) IN A DAY**

Climbing trees

Sloths climb up and down trees by hugging the tree trunk. When moving horizontally, they hang upside down from the branches.

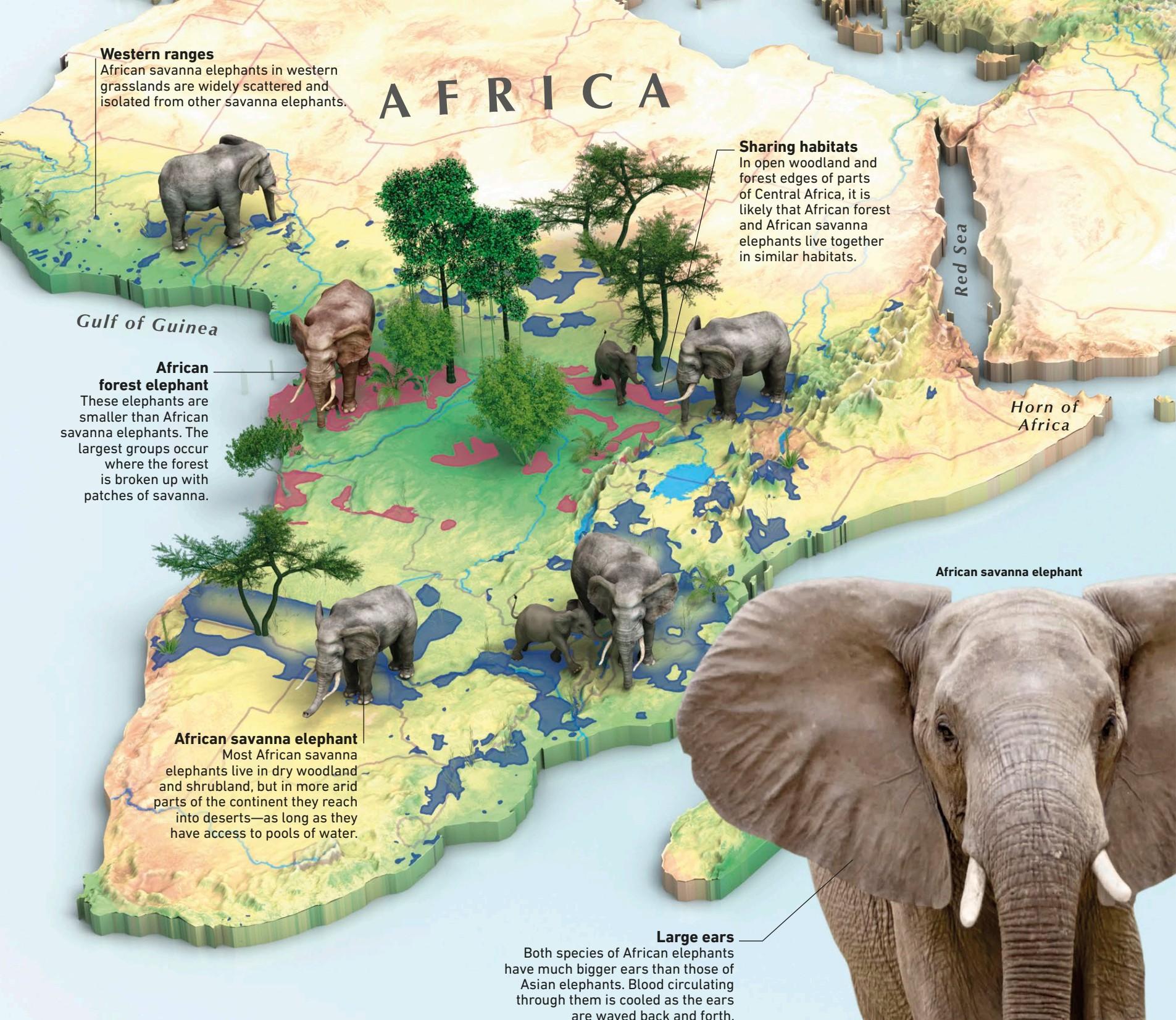
Leafy diet

Sloths move slowly because the rainforest leaves of their diet don't contain many nutrients. The little energy they gain from their diet is needed for both getting around and digestion.



Life in trees

These slow-moving tree dwellers live in the dense tropical rainforest canopies of Central and South America. They are able to eat the leaves of around 50 species of rainforest tree, but individuals tend to spend most of their time in a single tree that contains their favorite leaves.



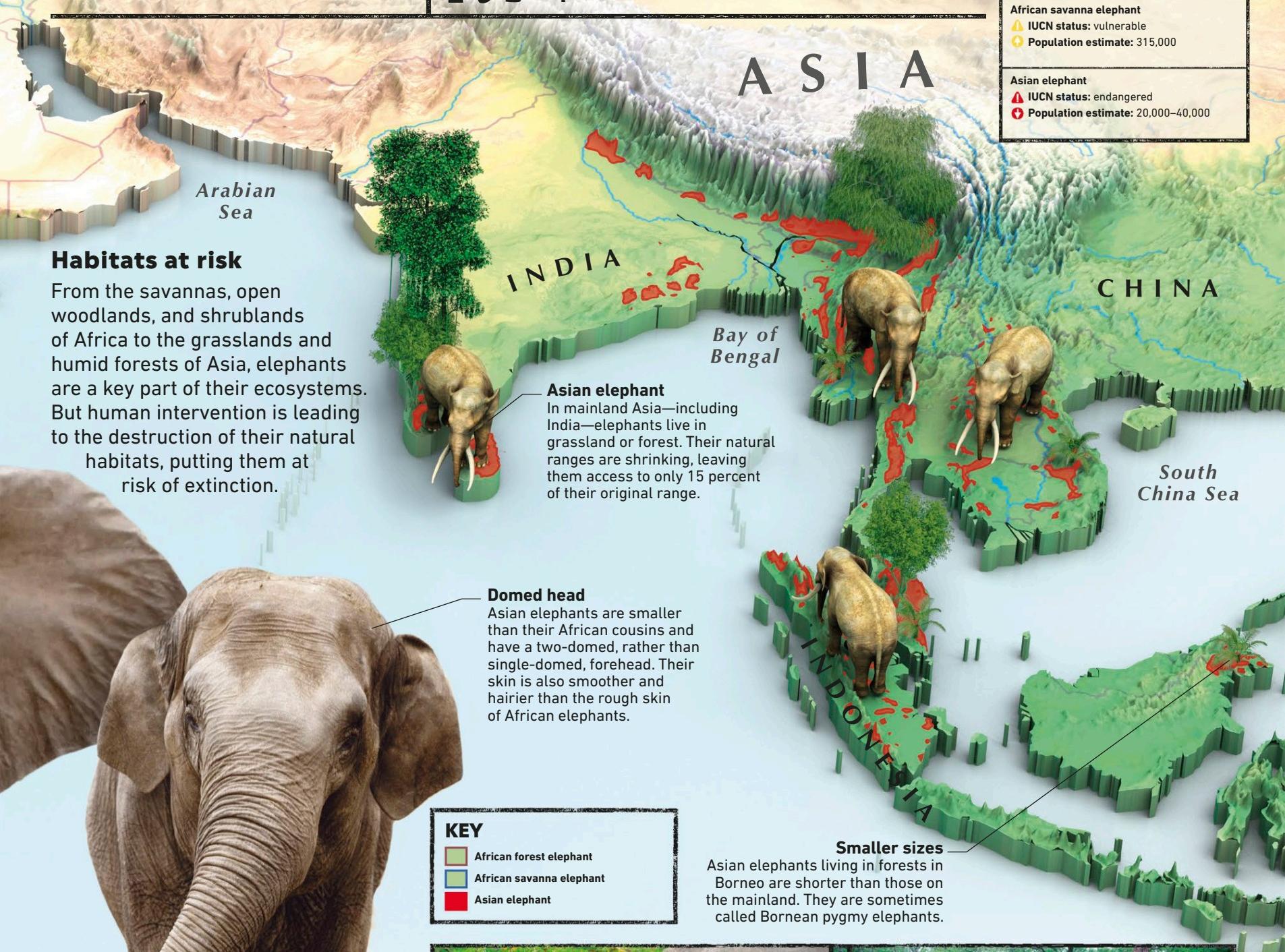
Elephants

These giants are the world's heaviest land animal. They are well known for their long trunks and mighty tusks. Two of the three existing species can be found in fragmented ranges around Africa, while their smaller cousins inhabit the tropical forests of Southeast Asia.

20,000 AFRICAN ELEPHANTS ARE KILLED EACH YEAR FOR THE ILLEGAL IVORY TRADE



THE AFRICAN ELEPHANT POPULATION HAS DROPPED BY 90% OVER THE LAST 100 YEARS



Asian elephant



Spreading seeds

Elephant herds can flatten foliage and tear down trees, but they also help scatter seeds. They eat ripe fruit from their favorite trees, and the seeds pass out in piles of fertilizing dung.



Tree browsers

Elephants are not picky eaters—they browse on leaves, seeds, fruit, flowers, grass, and tree bark. They will even push over trees to get to the nutritious roots deep underground.

ANIMALS IN DANGER

African forest elephant

- IUCN status: endangered
- Population estimate: 100,000

African savanna elephant

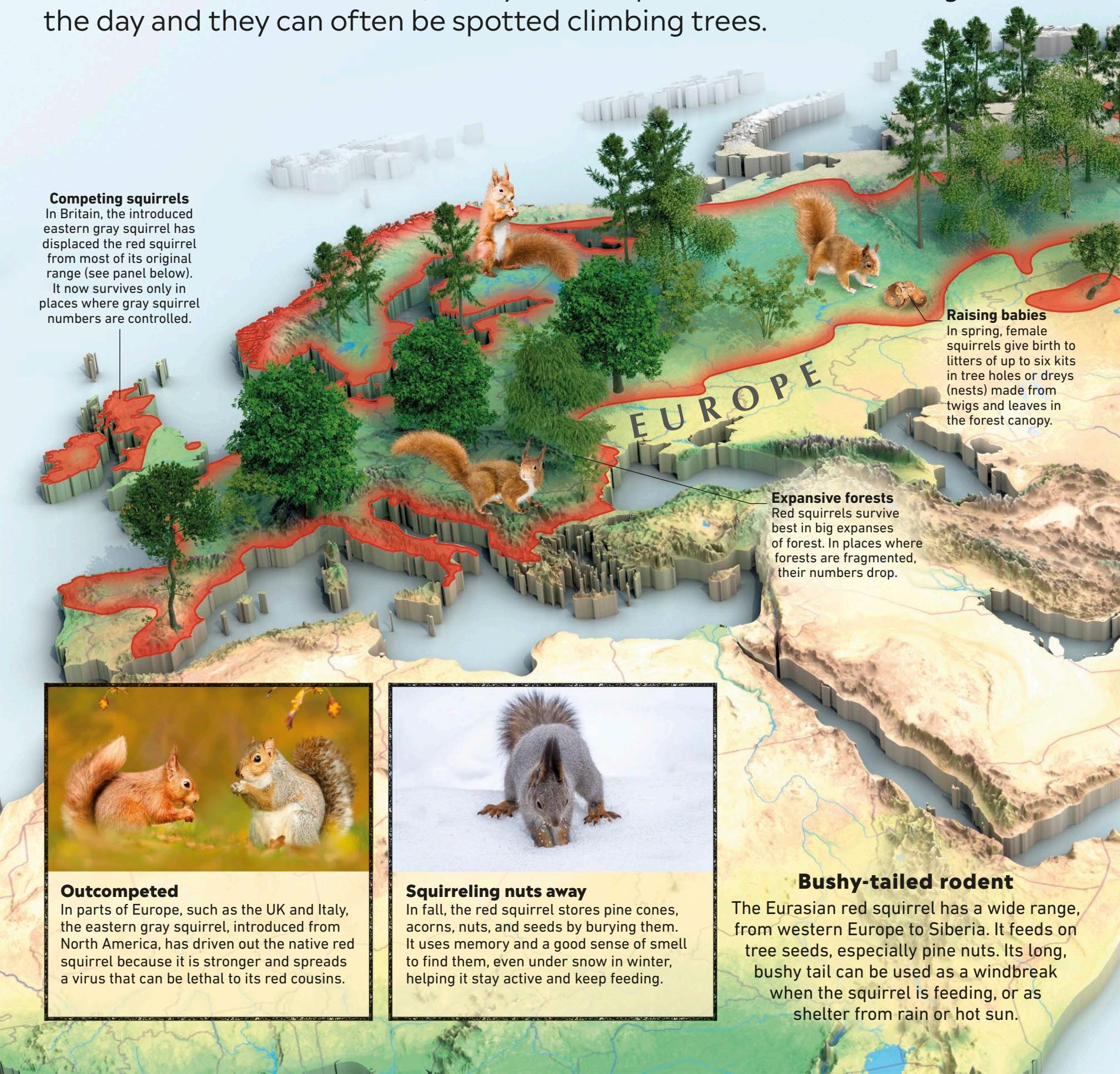
- IUCN status: vulnerable
- Population estimate: 315,000

Asian elephant

- IUCN status: endangered
- Population estimate: 20,000–40,000

Eurasian red squirrel

Around 90 species of tree squirrel live in forests around the world. Among them is the Eurasian red squirrel, which dwells in cool northern forests. Unlike most rodents, bushy-tailed squirrels are active during the day and they can often be spotted climbing trees.



A RED SQUIRREL CAN JUMP UP TO 6½ FT (2 M) BETWEEN TREES—10 TIMES ITS OWN BODY LENGTH



IN BRITAIN, THERE ARE AN ESTIMATED 140,000 RED SQUIRRELS, COMPARED TO 2.5 MILLION GRAY SQUIRRELS



Desert rodent

The elusive long-eared jerboa inhabits the deserts and shrublands that stretch between southern Mongolia and northern China. Its elongated feet help it hop around the desert sand and leap into the air to catch insects. The large surface area of the jerboa's ears helps keep it cool by radiating heat from its body.





Star-nosed mole



With its hyper-sensitive nose and lightning fast reflexes, this unique North American mole is a highly successful hunter of small invertebrates such as worms, insects, and spiders. It spends most of its life in its intricate system of burrows, where it rests, builds nests for rearing young, stores food, and traps prey.

NORTH AMERICA

KEY

Star-nosed mole range

Wet habitats

The star-nosed mole lives in a range of habitats across eastern North America, including coniferous and deciduous forests, swamps, peat bogs, and along the banks of streams, lakes, and ponds. It prefers to build its burrows in water-logged ground, and relies on its sense of smell to detect prey underground.

Semi-aquatic mammals

Star-nosed moles are excellent swimmers, and many of their burrows open underwater. They use their highly sensitive nose to hunt for prey—such as aquatic insect larvae, snails, and shrimp—in the waterbed. The rest of their burrow system is built above the water level to prevent flooding.

Mole hill

Some burrows have underwater exits

Nest chamber for rearing young

Western barrier

The star-nosed mole relies on wet habitats to feed and survive, so the western border of its range ends where the drier central prairies of North America begin.

Lake Superior

Mole hill

Most of its life is spent in underground burrows, but occasionally the star-nosed mole heads to the surface through mole hills in order to hunt prey at night.

THERE ARE 25,000 TOUCH SENSORS ON THE TENTACLES OF A STAR-NOSED MOLE

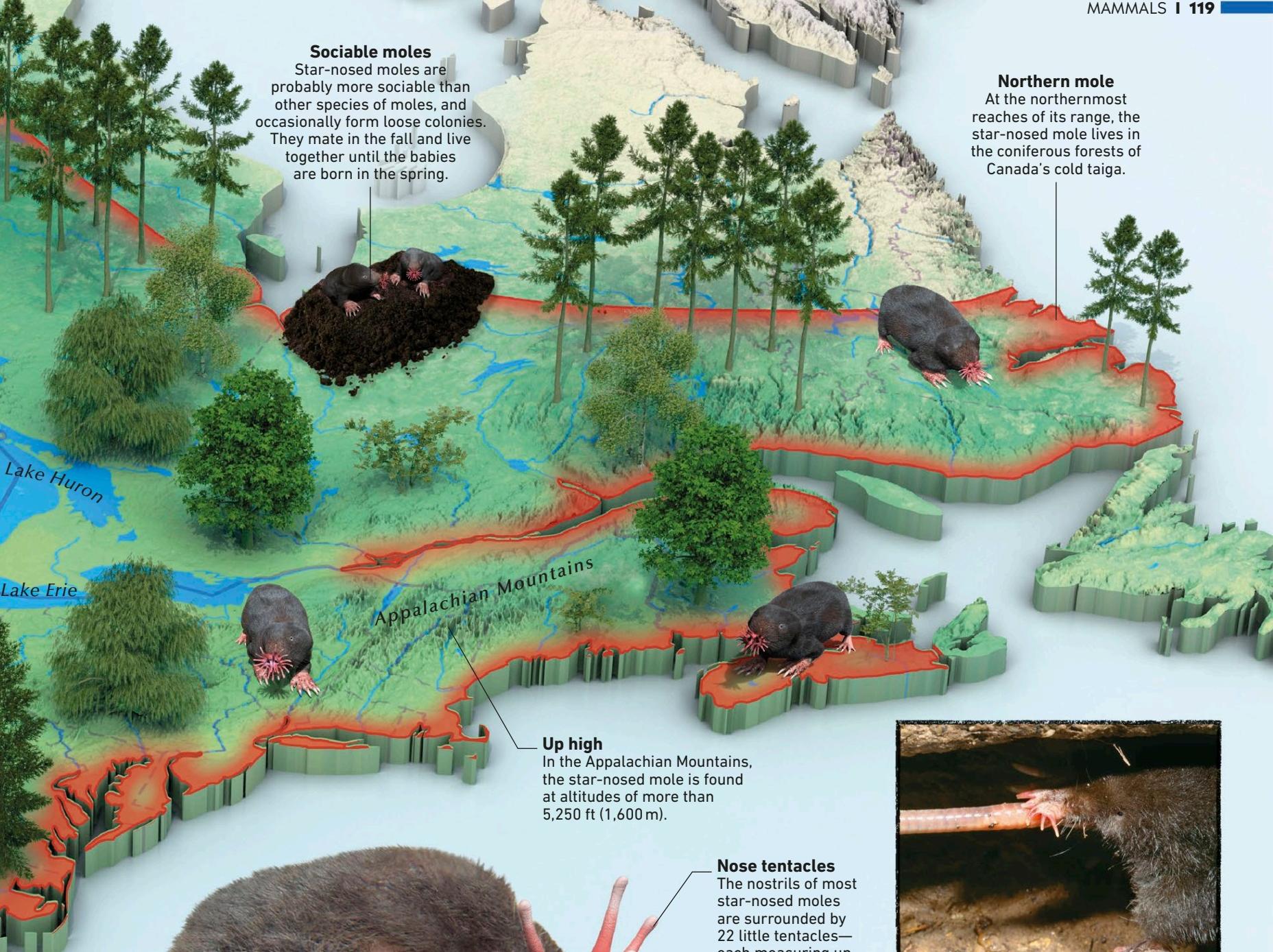


STAR-NOSED MOLES EAT 50% OF THEIR BODY WEIGHT IN PREY ANIMALS EACH DAY



Sociable moles

Star-nosed moles are probably more sociable than other species of moles, and occasionally form loose colonies. They mate in the fall and live together until the babies are born in the spring.

**Northern mole**

At the northernmost reaches of its range, the star-nosed mole lives in the coniferous forests of Canada's cold taiga.

Up high

In the Appalachian Mountains, the star-nosed mole is found at altitudes of more than 5,250 ft (1,600 m).

Nose tentacles

The nostrils of most star-nosed moles are surrounded by 22 little tentacles—each measuring up to $\frac{5}{32}$ in (4 mm) long.

**Catching prey**

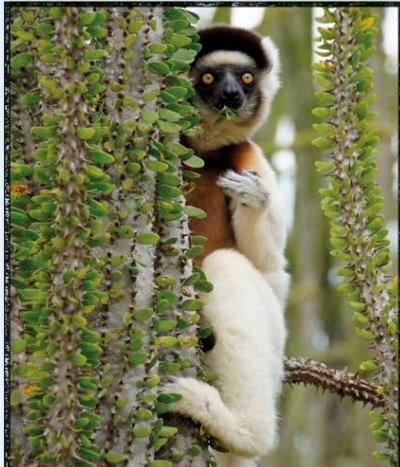
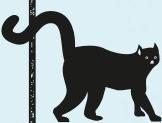
With the help of its super sensitive nose, the star-nosed mole is perfectly adapted for finding tiny prey in the water-soaked ground. The fleshy tentacles around the mole's nose are packed with thousands of touch sensors, and it can take less than a fifth of a second for the mole to detect and grab each morsel.

Lemurs



There are more than 100 species of lemur, and all of them are found only on the island of Madagascar and nowhere else. The five ranges on this map represent a small sample of these isolated primates, and they all heavily depend on their forest habitats for survival.

50 SILKY SIFAKAS ARE LEFT IN THE WILD—THEY ARE ONE OF THE RAREST PRIMATES IN THE WORLD



Spiny tree habitat

Thorny forests in the dry south of Madagascar—where spiny trees grow like giant cacti—are home to particular kinds of lemurs, such as Verreaux's sifaka. They have padded palms and soles on their hands and feet, allowing them to leap from trunk to trunk without injury.

Ring-tailed lemur

The ring-tailed lemur is found only in Madagascar's dry southern forests and arid open areas. It spends 70 percent of its time on the ground, more than any other lemur species.

Verreaux's sifaka

The powerful thighs of a sifaka—good for leaping from tree to tree—are also used for bounding across the ground or along horizontal branches. They live in forest habitats, including tropical rainforest and spiny dry forest.

Red-tailed sportive lemur

Despite its name, this species is not very active. Restricted to a tiny area of dry deciduous forest between two rivers, individuals rarely travel more than $\frac{3}{5}$ mile (1 km) from their home range. When their habitats are deforested, they are unlikely to move to distant trees.

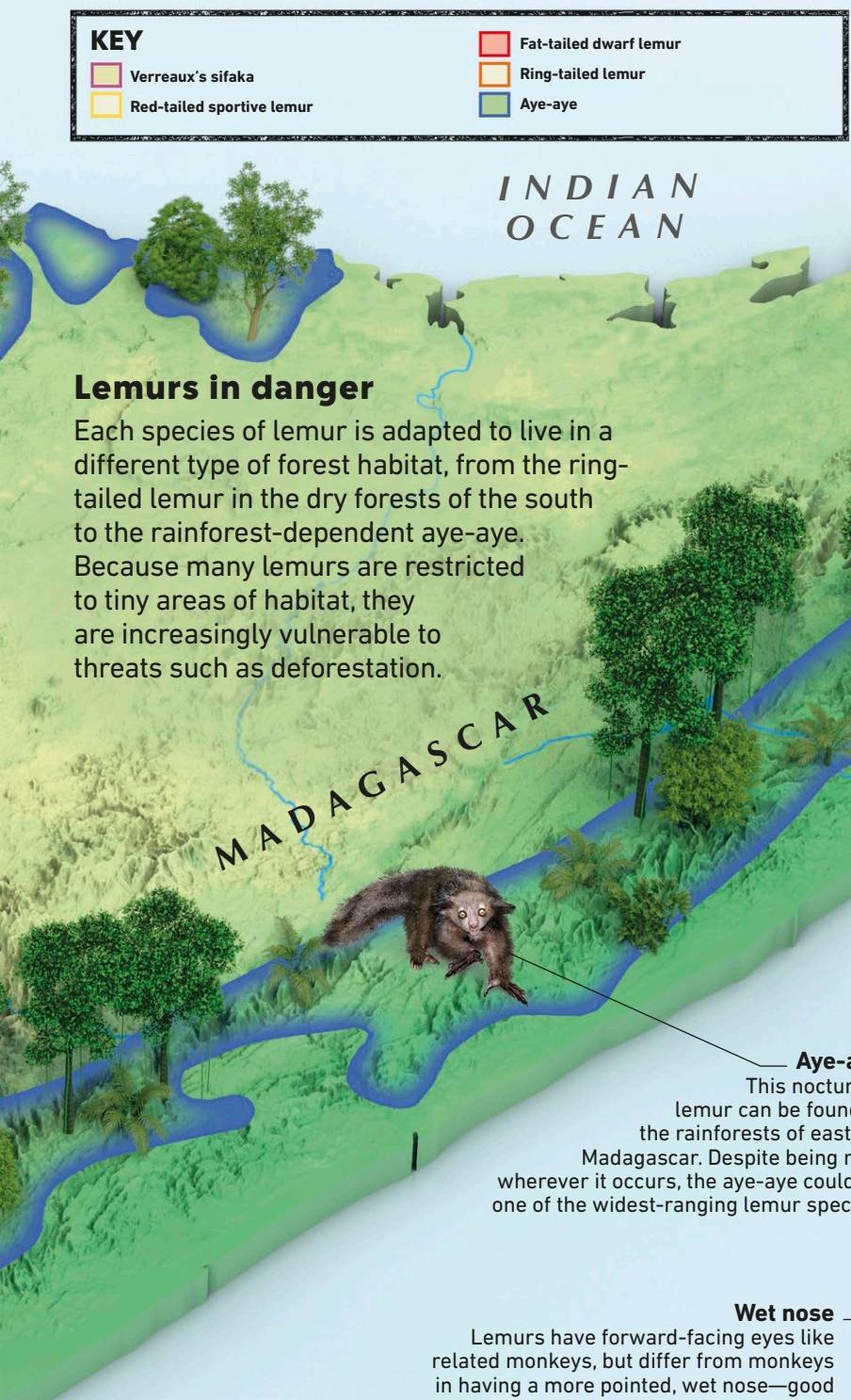
Fat-tailed dwarf lemur

This dwarf lemur endures Madagascar's dry winter season by entering a hibernation-like state and surviving on the stores of fat in its tail. Though its range is small, it is one of the few lemur species with an abundant population.

ANIMALS IN DANGER

 IUCN lists 34 lemur species as critically endangered, including the red-tailed sportive lemur and Verreaux's sifaka, and 45 as endangered, including the ring-tailed lemur and aye-aye. Most others are vulnerable.

WEIGHING ONLY 1 OZ (31 G), MADAME BERTHE'S MOUSE LEMUR IS THE SMALLEST PRIMATE IN THE WORLD



Japanese macaque



Most of the more than 330 species of monkeys around the world live in the hot tropics, but the Japanese macaque tolerates the cold.

In Japanese forests, it lives further north than any other nonhuman primate, sometimes ranging high up into cold mountains with heavy winter snowfall.

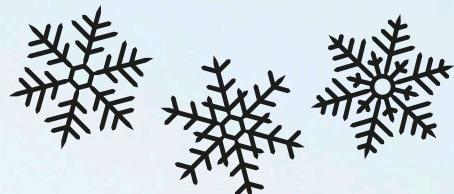
Southern monkeys

In the thick, warm forests of southern Japan, macaques spend about half their time on the ground and half in the branches, where they feed on fruit and leaves as well as small animals and eggs.

Island monkey

The Japanese macaque lives on the main Japanese islands of Honshu, Shikoku, and Kyushu. In the southern parts of its range this monkey lives in warm, temperate evergreen forest, but it also inhabits temperate deciduous forest further north.

THE JAPANESE MACAQUE CAN SURVIVE IN TEMPERATURES AS LOW AS 5°F (-15°C)



Group living

Across their range, Japanese macaques live in large social groups that can include more than 100 individuals. Groups are bigger where the monkeys are deliberately fed by visiting humans.

Motherly care

Female macaques give birth to a single baby after a pregnancy of about 5½ months. The youngster stays in the care of its mother for up to a year.

Chugoku Mountains

In the highlands

Although they were once more widespread, today Japanese macaques are mostly found in highland areas, having been hunted elsewhere because of their raids on crops.

Beach monkeys

On the tiny Japanese island of Koshima, off the coast of Kyushu, Japanese macaques have learned skills that get passed down as youngsters copy adults. On beaches, the monkeys wash food such as sweet potatoes in the sea, and separate lighter grains of wheat from heavier sand by letting the grains float upward in the water.





BETWEEN 1995 AND 2000, THE **EBOLA** VIRUS KILLED THREE-QUARTERS OF THE WESTERN GORILLA POPULATION



GREAT APES LIVE IN **LARGE FAMILY GROUPS**—ONE EASTERN GORILLA GROUP HAD A RECORD **65 MEMBERS**

ANIMALS IN DANGER

Chimpanzee
⚠ IUCN status: endangered
➕ Population estimate: 340,000–430,000

Bonobo
⚠ IUCN status: endangered
➕ Population estimate: unknown

Western gorilla
⚠ IUCN status: critically endangered
➕ Population estimate: 316,000

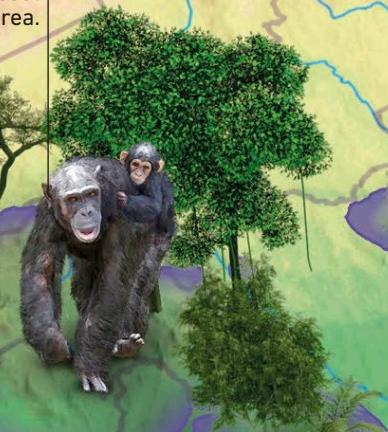
Eastern gorilla
⚠ IUCN status: critically endangered
➕ Population estimate: fewer than 5,000

KEY

- Chimpanzee
- Bonobo
- Western gorilla
- Eastern gorilla

Finding food

In West Africa's rainforests, families of chimpanzees may travel long distances between fruiting trees. They build up a mental map of the best food sources in a wide area.



Green living

Great apes use branches and foliage to build nests for sleeping at night, and sometimes for resting during the day. Chimpanzee and bonobo nests are built high in trees but gorillas, who are heavier, often nest on the ground, like the one seen here.



Great apes

The great apes are our closest animal relatives. All great ape species, except the orangutans (see pp.126–127), are found on the continent of Africa. Living in sociable groups in forests around the equator, chimpanzees and bonobos spend more time in trees, while gorillas stay mainly on the ground.



Using tools

Gorillas and bonobos mainly eat plants and fruit, but chimpanzees are more carnivorous, and even use tools to help catch prey or collect food. They use twigs to pull termites from holes, sharpened sticks to spear tiny primates, and stones or clubs to crack nuts. Young chimpanzees watch older ones to learn how it is done.



Threat display

Adult male gorillas intimidate rivals by standing upright to look bigger, while rhythmically beating their chest with cupped hands and hooting or roaring loudly. Older males are known as silverbacks.

Shrinking habitats

The chimpanzee has the widest range of any great ape and can survive in drier, more open woodland than bonobos and gorillas. But all great ape species are threatened with extinction as the cutting down of rainforest continues to shrink their natural habitats, while poaching kills large numbers every year.





Orangutans



Three species of orangutan represent the great apes of tropical Asia. They depend on their wild rainforest habitats, so are now endangered as deforestation breaks up their home ranges into ever smaller patches.



Fur color

Adult Bornean orangutans have orange-brown or maroon fur.

Far from their kind

Shrinking habitats, separated by barriers such as rivers or roads, make it harder for adult orangutans to meet and breed. This means fewer babies are born, and populations shrink.

Borneo

Bornean orangutan
Mature male orangutans look very different from smaller females: males have fleshy cheek pads that stick out from the face, especially in the Bornean species.



Under threat

Sumatra and Borneo have lost more than half of their rainforests in the past century—mainly as trees are cleared for plantations that produce crops such as palm oil. If current trends continue, all orangutans could be extinct within decades.

Java



Indian flying fox

With more than 1,400 species, bats make up the second-biggest order of mammals after the rodents, and live in most parts of the world except the poles and remote islands. The Indian flying fox is one of the world's largest bats, and is found in tropical forests and swamps across the Indian subcontinent.

THE
LARGEST-
KNOWN
ROOST
OF INDIAN
FLYING
FOXES WAS
MADE UP OF
24,000
BATS



OTHER BATS



Ghost bat
Northern Australia is home to one of the world's biggest predatory bats. The ghost bat hunts mice, lizards, birds, and other bats.



Greater horseshoe bat
Like many other bats, this species tracks insects in flight by homing in on the sound of echoed clicks. This is called echolocation.



New Zealand lesser short-tailed bat
Having evolved on islands originally free of predators, this bat crawls along the ground more than any other species.



Madagascar sucker-footed bat
This bat clings to the smooth surfaces in between folds of palm leaves using tiny suckers on its wrists and ankles.



White-winged vampire bat
This tropical South American bat mainly targets birds—biting and lapping the blood of a sleeping victim.



H i m a l a y a s

Forest colonies

In Bangladesh, the biggest colonies of Indian flying foxes live in the densest forest—where there is a richer supply of fruiting trees and less disturbance from humans.

Handy wing

The wings of all bats are made of thin sheets of skin that extend out from the sides of the body and stretch between the long finger bones of their hands.

Finding fruit

The Indian flying fox lives across India, Pakistan, Bangladesh, and Sri Lanka. These large, fruit-eating bats sleep through the day and wake at dusk to seek out food. They are known to fly up to 90 miles (150 km) in search of the best sources of food—especially fig trees that are heavy with fruit—which they locate with their highly sophisticated senses of sight and smell.

THE WINGSPANS OF INDIAN FLYING FOXES CAN REACH UP TO 6 FT (2 M)



TIGERS HAVE DISAPPEARED FROM MORE THAN 90% OF THEIR ORIGINAL HABITAT RANGE, MAINLY DUE TO ILLEGAL POACHING



ANIMALS IN DANGER

Tiger
⚠ IUCN status: endangered
⌚ Population estimate: 2,150–3,160

Bengal tigers

On India's central plateau, below the Himalayas, Bengal tigers live in floodplains with marshes and oxbow lakes, as well as in the drier deciduous forest further south.

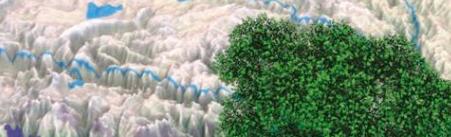


INDIA

Dry and wet forests
In southern India, Bengal tigers are found in the wet evergreen and dry deciduous forests in the hills that line the foothills of the Western Ghats.

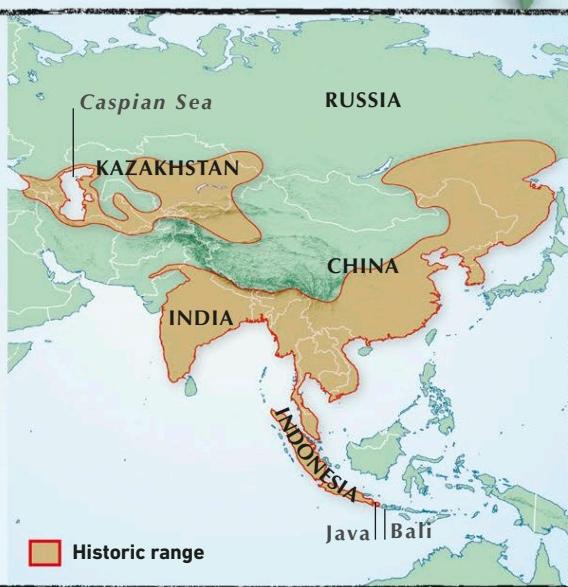
Mangrove habitat
In far eastern India and Bangladesh, Bengal tigers cope with the changes of the coastal Sundarbans—the world's biggest area of mangrove forest, a place that is flooded daily by the tides.

ASIA



Vanishing tigers

A century ago, tigers lived from the Caspian Sea in the west to Java and Bali in the east. Today no tigers survive in these places, and throughout the rest of their range they exist in ever smaller patches. Poaching, often for the illegal trade in body parts which are used in traditional medicine, poses the biggest threat to remaining tigers.



Indochinese tigers

Tigers from the tropical rainforests and dry forests of mainland Southeast Asia are smaller than those of India but larger than the ones in Sumatra. Only a few hundred remain.



Sumatran tigers

The smallest tigers—nearly half the size of those from Siberia—live in the remaining rainforests of Sumatra in Indonesia. Their thinner coats are darker orange and have more stripes.



THERE ARE **MORE** TIGERS KEPT IN CAPTIVITY THAN THERE ARE IN THE WILD

A TIGER CAN **EAT MORE THAN 80 LB (35 KG) OF MEAT IN ONE MEAL**

Tiger territories

There are local populations of tigers in different regions of Asia, but they all belong to the same species. Adult tigers only come together to mate and otherwise live alone, patrolling territories to protect their own supply of prey. Since prey is scarcer for Siberian tigers, they need to roam territories four times bigger than those of the Bengal tigers on the Indian subcontinent.



Siberian tigers

Tigers of Russia's Siberian pine forests are among the largest of all cats, with paler coloring, fewer stripes, and thick fur that keeps out the bitter cold of winter.

Top cat
A tiger has massive forelimbs, needed to strike with enough strength to bring down large prey. Its fiery-colored coat helps conceal it in sun-dappled forests.



Tiger

The tiger is the world's biggest cat. But this formidable hunter is also hunted: across Asia, tiger numbers are falling as more become victim to poachers, or lose their habitat to farming, logging, and ever greater numbers of humans needing space.

Lone hunter

Adult tigers hunt alone, stalking their prey from the cover of vegetation. Blending in, a tiger can sneak close to its prey before ambushing it. Grabbing the prey with its broad forepaws, and with its long claws extended, the tiger kills its victim by a bite to the neck.



ANIMALS IN DANGER

Lion
IUCN status: vulnerable
Population estimate: 20,000–32,000

KEY

Lion range

EUROPE

Mediterranean Sea

Sahara

Forest clearings

Only in the Congo Basin do lions come close to thick rainforest. Here, small numbers survive in patches of grassland in forest clearings.

Between desert and forest

Lions are scarcer in western Africa, and survive only in patches of grassland between the Sahara Desert further north and thick coastal forests to the south.



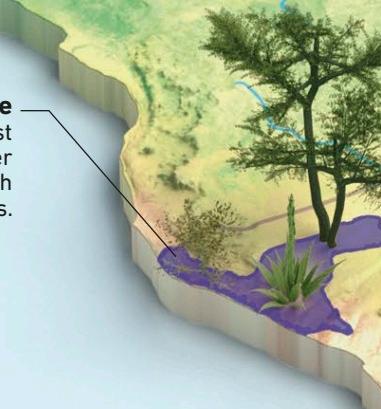
ATLANTIC OCEAN

AFRICA

Congo

Desert home

Lions can roam far into the driest deserts, getting much of the water they need from the prey they catch and even from eating wild melons.



Lion

This big cat is second in size only to the tiger. It is known as the king of the jungle, but in fact lives in the open grasslands and savannas of Africa, where it is superbly adapted to hunting. Unlike most cats, which are solitary hunters, lions work together as a group, or pride, to bring down prey.



THE ROAR OF AN ADULT MALE LION IS SO LOUD THAT IT CAN BE HEARD CLEARLY UP TO 5 MILES (8 KM) AWAY



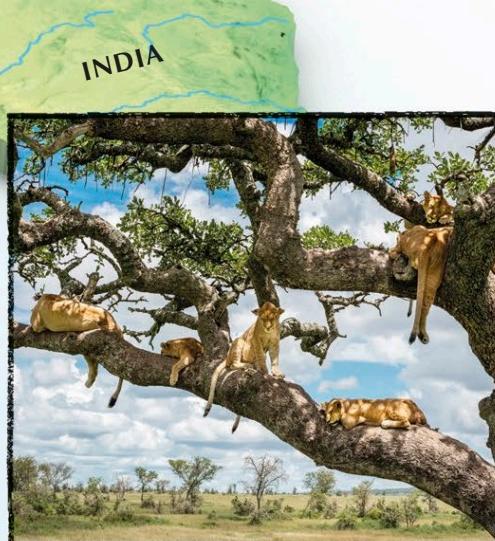
Historic range



Camouflage
By matching the color of the surrounding grassland of the African savanna, females can get close to prey—including targets as big as buffalo and giraffe—before giving chase.

Fragmented habitats

Lions once freely roamed the savannas, grasslands, scrub, and open woodlands of the African continent, but much of their natural habitat has been lost. They are now largely limited to game reserves and national parks.



Savanna trees

Although lions hunt in open grassland, a pride often gathers under shady trees during the heat of the day and climbs into branches to reach cool breezes. This vantage point also helps them spot prey animals traveling through the grasslands.







Stealthy lynx

Recognizable by the pointy tufts of hair on their ears, these Iberian lynxes are hunting European rabbit—their favorite prey. Once common across the Iberian Peninsula, these cats are now found in only two small areas in southern Spain. A drop in rabbit populations and the spread of human settlements have led to their decline.



Finding prey

Wolves from North America live in plains and forests where there is plenty of prey, including beavers, white-tailed deer, and moose. Packs work as a team when hunting big prey, but they hunt alone for smaller meals.

Arctic tundra

Arctic wolves are especially adapted to survive in the far-north regions of Greenland and North America.

EUROPE

AFRICA

Local populations

In different parts of the wolf's huge range, local populations have habitat-specific adaptations and even look different, from the northern Arctic wolf to the southern dingo. But they all belong to the same species—gray wolf. Packs control and hunt in vast territories, and they communicate with each other by howling and scent-marking.

Padded feet

The feet of wolves and dogs have soles with protective pads and clawed toes. Unlike those of cats, their claws are blunt and not retractable.

Fur

In most wolves the fur is mottled gray, but some wolves are born white or black. Wolves living in the coldest climates grow thicker fur.

Gray wolf

Eurasian wolf

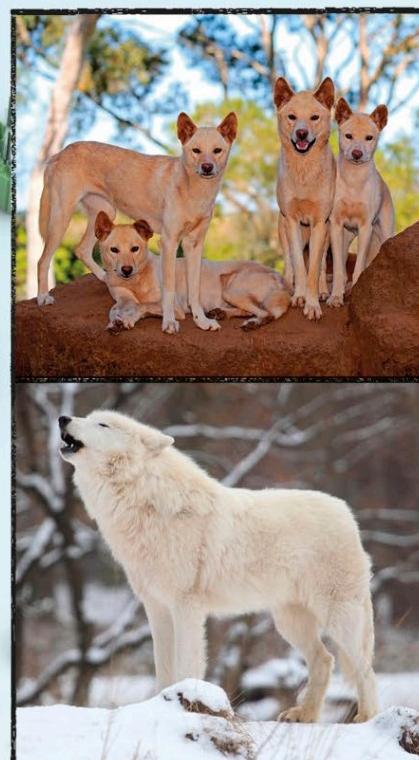
Wolves that live in the forests of Scandinavia and Russia prey on anything from red deer and wild boar to hares and voles. They may also attack livestock and raid human garbage.

This wide-ranging canine is a highly social animal, living and hunting in family groups, known as packs. It is found across vast areas of the globe in many different habitats, from the frozen Arctic to hot, dry deserts.



THE LARGEST-KNOWN PACK WAS MADE UP OF 36 WOLVES

WOLVES CAN ROAM UP TO 12 MILES (30 KM) IN A SINGLE DAY



Australian dingoes

All domesticated dogs, which we keep as pets, are descended from the gray wolf and belong to the same species. Dingoes originated from domesticated dogs that were brought to Australia from Asia by humans 4,000 years ago and then returned to the wild.



Arctic wolves

Found in the Arctic tundras of Greenland and North America, the Arctic wolf is one of the biggest types of wolf. It survives freezing conditions by having long, thick fur and a thick layer of body fat, and stays white throughout the year as effective camouflage against the snow.



ANIMALS IN DANGER

Andean bear
⚠ IUCN status: vulnerable
⌚ Population estimate: 2,500–10,000

Polar bear
⚠ IUCN status: vulnerable
⌚ Population estimate: 22,000–31,000

Sloth bear
⚠ IUCN status: vulnerable
⌚ Population estimate: unknown

Range of habitats

Bears are found across Europe, Asia, North America, and in parts of South America. The largest bear species—polar and brown bears—live in the cold north. Further south, smaller bears with smaller ranges live in the tropics.

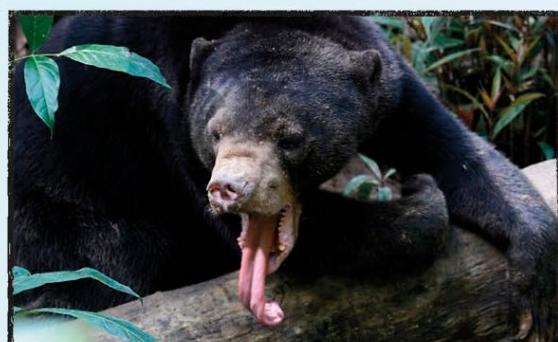
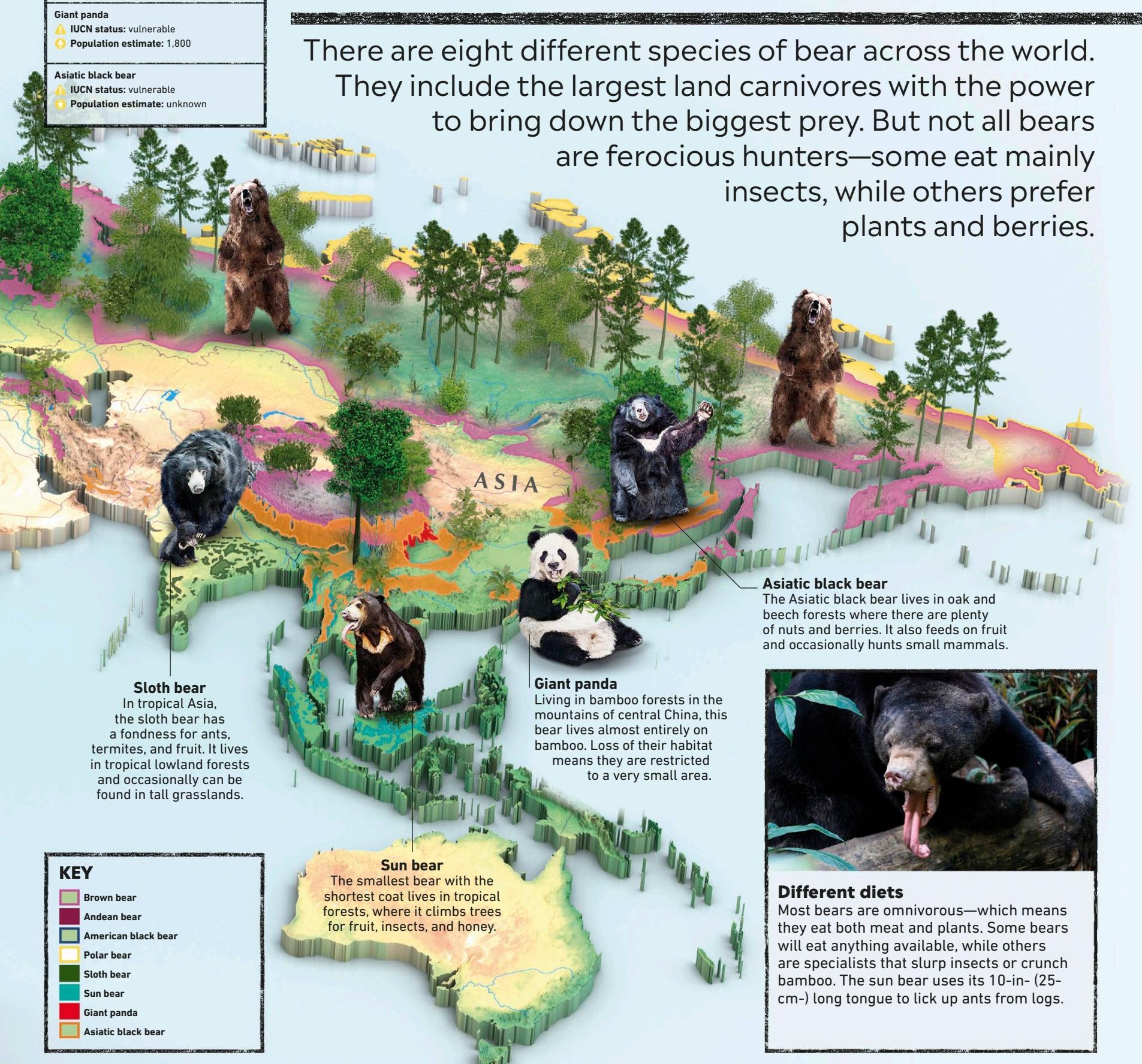
Adapting to climate

Polar bears are perfectly adapted to life in their Arctic habitat. Their thick fur is made of hollow hairs that trap warmth close to the body. Even their paw pads are furry, with tiny bumps to help grip slippery ice. Their small ears and tail minimize heat loss. Loss of their unique habitat is putting these bears at risk, as climate change reduces the sea ice on which they depend.



Bears

There are eight different species of bear across the world. They include the largest land carnivores with the power to bring down the biggest prey. But not all bears are ferocious hunters—some eat mainly insects, while others prefer plants and berries.



Different diets
Most bears are omnivorous—which means they eat both meat and plants. Some bears will eat anything available, while others are specialists that slurp insects or crunch bamboo. The sun bear uses its 10-in- (25-cm-) long tongue to lick up ants from logs.

POLAR BEARS ARE THE BIGGEST SPECIES AND CAN WEIGH UP TO 1,760 LB (800 KG)



THERE ARE FEWER THAN

2,000

GIANT PANDAS LEFT IN THE WILD

HONEY BADGERS CAN STUN BEES WITH A SQUIRT OF REPELLENT SPRAY FROM GLANDS AROUND THEIR BOTTOM

HONEY BADGERS ARE RESISTANT TO SNAKE VENOM



Fearless badgers

Sometimes honey badgers see off threats from predators much larger than themselves, such as this pack of wild dogs. Although they will rarely pick a fight, if attacked they rush at the assailants, hissing, raising their hackles, and releasing a stench from their anal glands.



Finding honey

In central Africa, honey badgers roam in lush tropical rainforests, raiding wild beehives to steal the honey, as well as to eat the bee larvae.

Desert scavengers

Along the fringes of the Sahara Desert, honey badgers are expert at digging out spiny-tailed lizards and gerbils from burrows, or grubbing for roots and insects, but they also scavenge on carrion (the flesh of dead animals).

Helpful hunters

In the grasslands of East Africa, other predators, such as goshawks and jackals, have learned to follow digging honey badgers, and catch small animals that escape their notice.

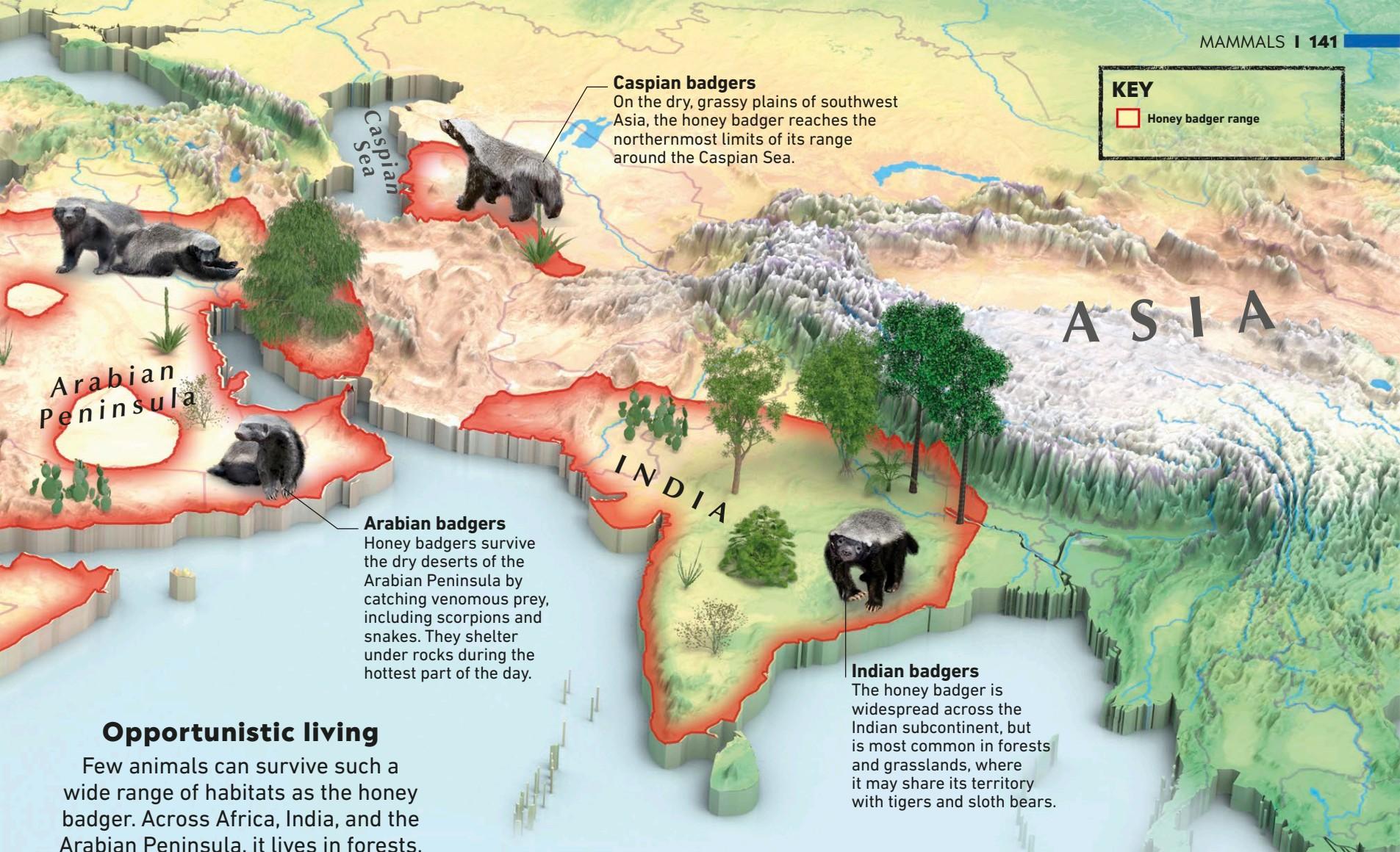
Thick-skinned badger

The honey badger's thick skin is loose, especially around the neck, enabling it to twist around to bite when grabbed by an attacker. A thick skin also protects it from snake bites and bee stings.

Badger baby

Honey badger mothers bring up their babies alone, moving them from den to den in their mouth every few days.



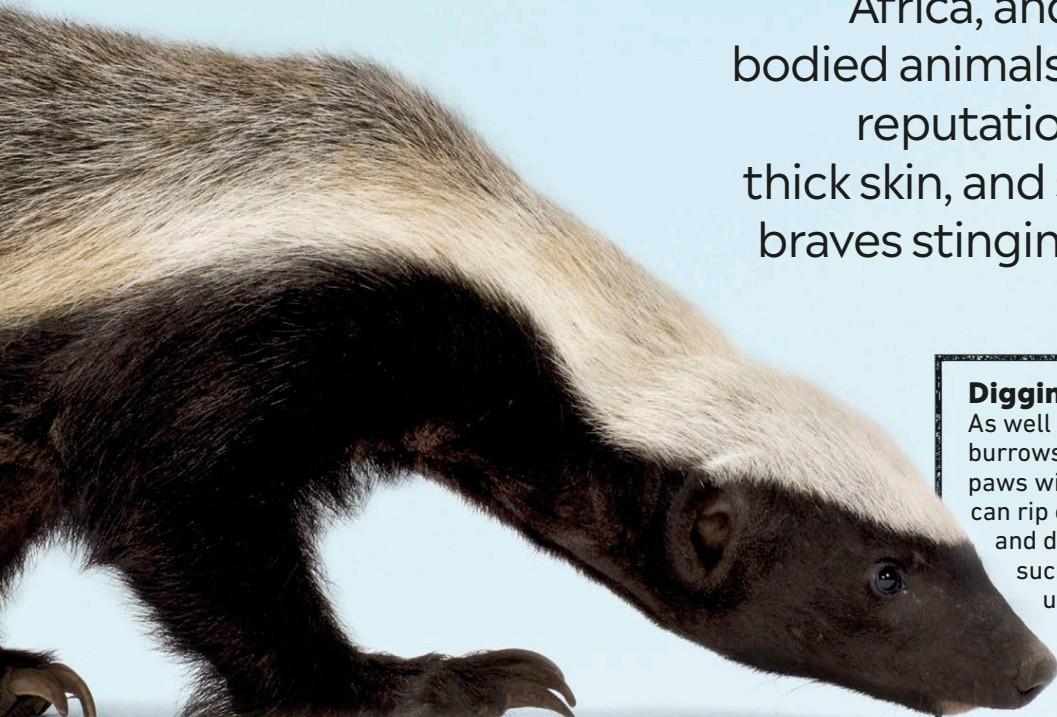


Opportunistic living

Few animals can survive such a wide range of habitats as the honey badger. Across Africa, India, and the Arabian Peninsula, it lives in forests, savanna, marshes, and deserts—wherever this nocturnal animal can dig a burrow. It is not found in the very driest parts of the Sahara.

Honey badger

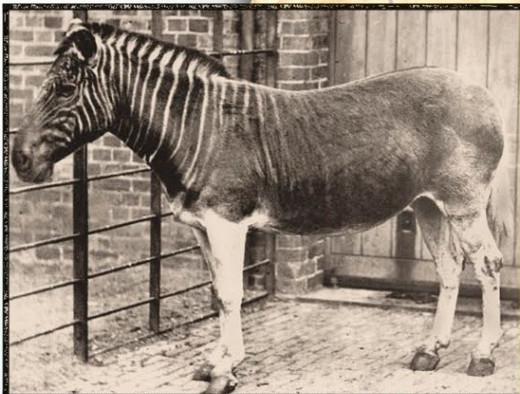
Six species of badgers live across North America, Africa, and Eurasia—and all are stocky, strong-bodied animals. The honey badger has a particular reputation for toughness. With a strong bite, thick skin, and sharp claws, it is a fierce hunter that braves stinging bees to satisfy its taste for honey.



Digging for prey

As well as excavating burrows, the strong front paws with their long claws can rip open bee hives and dig out animal prey such as rodents from underground. Food is found by smell and sound.



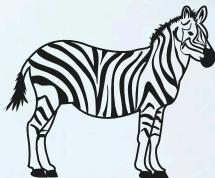


Quagga

A subspecies of the plains zebra with fewer stripes, called the quagga, was once common in southern Africa, but was hunted to extinction by about 1883. Today scientists are breeding zebra with quagga-like characteristics to try to bring the animal back.

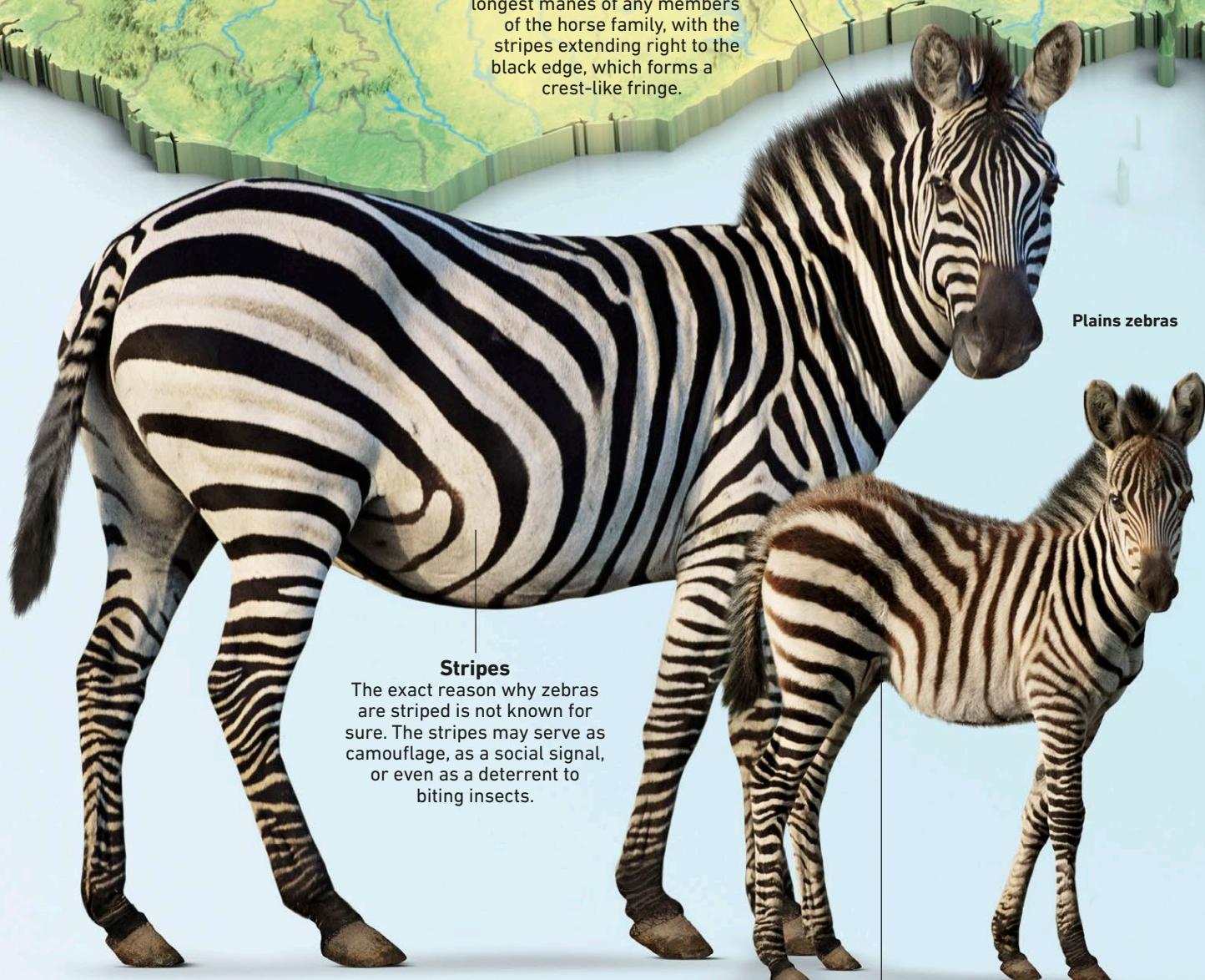
African grazers

Zebras graze on the grasses of a variety of habitats, from the plains zebra in open grasslands and savannas, to the Grevy's zebra in semi-arid scrub, and the mountain zebra on mountainous slopes and plateaus. During the dry season, the Grevy's and mountain zebras spread out further in their range to find better sources of food and water, but the plains zebra follows seasonal rains—to wherever the grass is greener—in large migrations.



THE PATTERN OF STRIPES OF EVERY INDIVIDUAL ZEBRA IS AS UNIQUE AS A HUMAN FINGERPRINT

A GROUP OF ZEBRAS IS SOMETIMES CALLED A DAZZLE



Stripes

The exact reason why zebras are striped is not known for sure. The stripes may serve as camouflage, as a social signal, or even as a deterrent to biting insects.



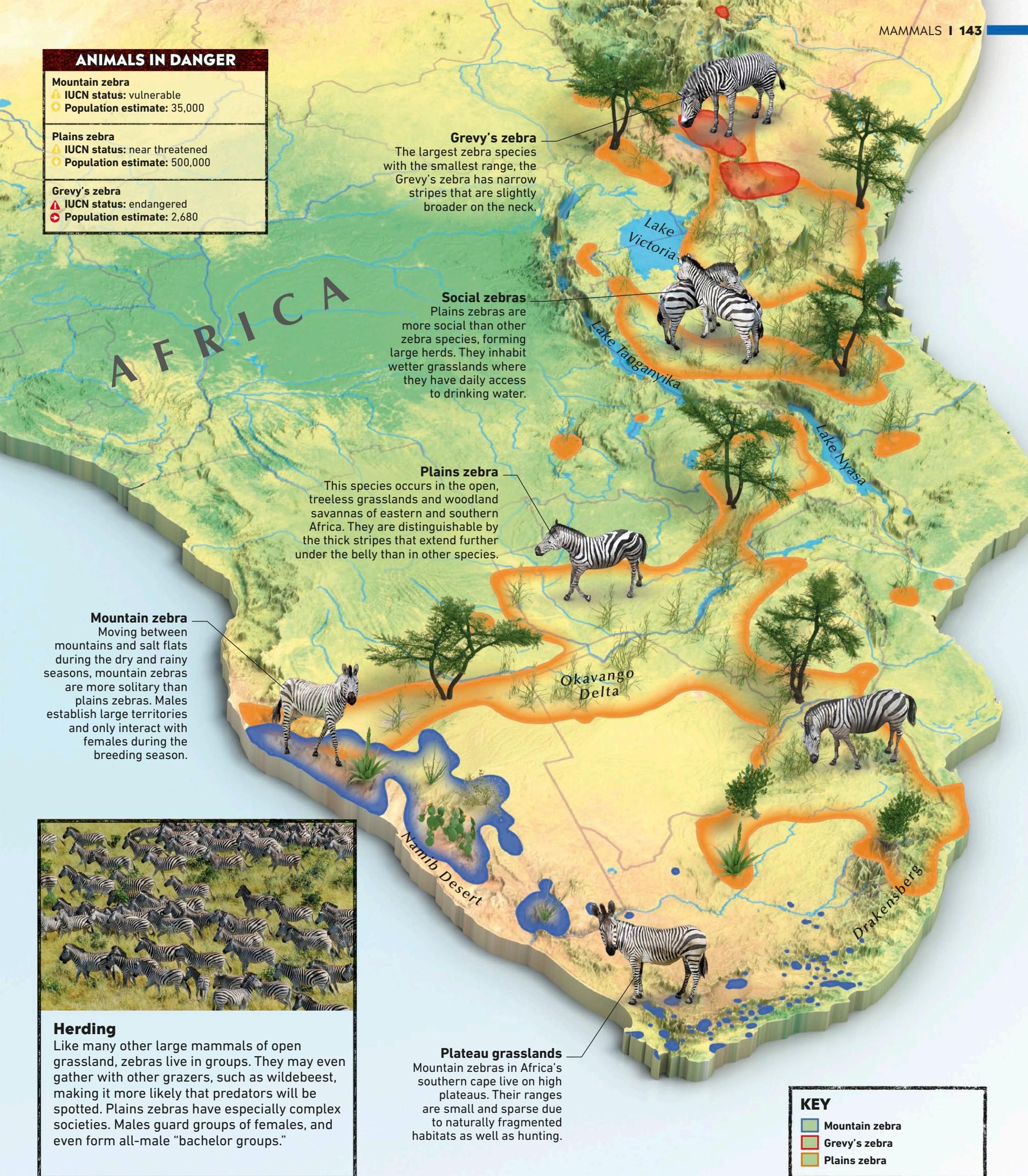
Black and white

Underneath their fur, zebras actually have dark skin. Their stripes develop as white over black rather than vice versa.

Zebras

Zebras are the most distinctive members of the horse family. Three species live on the grassy savannas in the eastern and southern parts of Africa, each with their own species-specific pattern of stripes.

ANIMALS IN DANGER		
Mountain zebra	IUCN status: vulnerable	Population estimate: 35,000
Plains zebra	IUCN status: near threatened	Population estimate: 500,000
Grevy's zebra	IUCN status: endangered	Population estimate: 2,680



THE ESTIMATED NUMBER
LEFT OF ADULT BREEDING
JAVAN RHINOS IS ONLY

18



RHINOS ARE HUNTED FOR THEIR
HORNS, WHICH ARE WORTH MORE
THAN THEIR WEIGHT IN GOLD

ATLANTIC
OCEAN

AFRICA

White rhinoceros

Most remaining white rhinos are found in the grasslands of southern Africa; a few have been reintroduced to eastern parts of the continent.

ANGOLA

NAMIBIA

ZAMBIA

BOTSWANA

ZIMBABWE

MOZAMBIQUE

SOUTH AFRICA

Black rhinoceros
Just four countries—Kenya, Zimbabwe, Namibia, and South Africa—protect more than 95 percent of all surviving black rhinoceroses. Protection means that numbers are rising in these nations.

Black and white

Despite their names, both kinds of African rhinoceroses are in fact grayish-brown. These symbols are black or white to distinguish the two species on the map.

Thick-skinned

The black rhino has coarse skin, in places up to 1½ in (4 cm) thick. This protects it from being scratched by thorny shrubs as it eats.

Mud bath

All rhinoceroses, including this female black rhino and her calf, like to wallow in mud pools. It helps cool the body and protect it from biting insects.



Grasping lip

The fingerlike upper lip of the black rhino helps grasp foliage. White rhinos have a flat, wide upper lip for grazing grass.

Black rhinoceros



KEY

- White rhinoceros
- Black rhinoceros

Rhino symbols mean there is a rhino population in this country, but the exact location can't be shown.

- Greater one-horned rhinoceros range
- Sumatran rhinoceros population
- Javan rhinoceros population

Arabian Sea



INDIA

Bay of Bengal

Himalayas

INDIAN OCEAN

ANIMALS IN DANGER

White rhinoceros
⚠ IUCN status: near threatened
Population estimate: 18,064
Black rhinoceros
⚠ IUCN status: critically endangered
Population estimate: 5,630
Greater one-horned rhinoceros
⚠ IUCN status: vulnerable
Population estimate: 3,590
Sumatran rhinoceros
⚠ IUCN status: critically endangered
Population estimate: less than 80
Javan rhinoceros
⚠ IUCN status: critically endangered
Population estimate: 68

Remaining rhinos

No group of large mammals is as endangered as rhinos. The two African species now only exist in nature reserves, and their true locations are kept secret to help protect them from highly organized poaching. The range of the greater one-horned rhino on this map shows the patches of habitat where this species still roam free. The dots for the Sumatran and Javan rhinos show where their remaining populations are.

Greater one-horned rhinoceros

The only species of rhino in India often lives in areas now hemmed in by villages and agricultural land. It grazes grasses and shrubs, but also stays close to water, where it feeds on aquatic plants.

Sumatran rhinoceros

The smallest species of rhinoceros only survives in the tropical forests of Sumatra, Indonesia. Populations used to live in the Malay Peninsula and Borneo, too, before hunting and deforestation killed them off.

Javan rhinoceros

The world's rarest rhinoceros lives in the forests of Ujung Kulon National Park in western Java. What was left of an Asian mainland population of this species—in Vietnam—was declared extinct in 2010.

Rhinos

In prehistoric times, rhinoceroses ranged across large areas of the globe. Today, five species survive on savannas in Africa and in forests and grassland in Asia, but poaching and habitat destruction have edged these unique creatures to the brink of extinction.

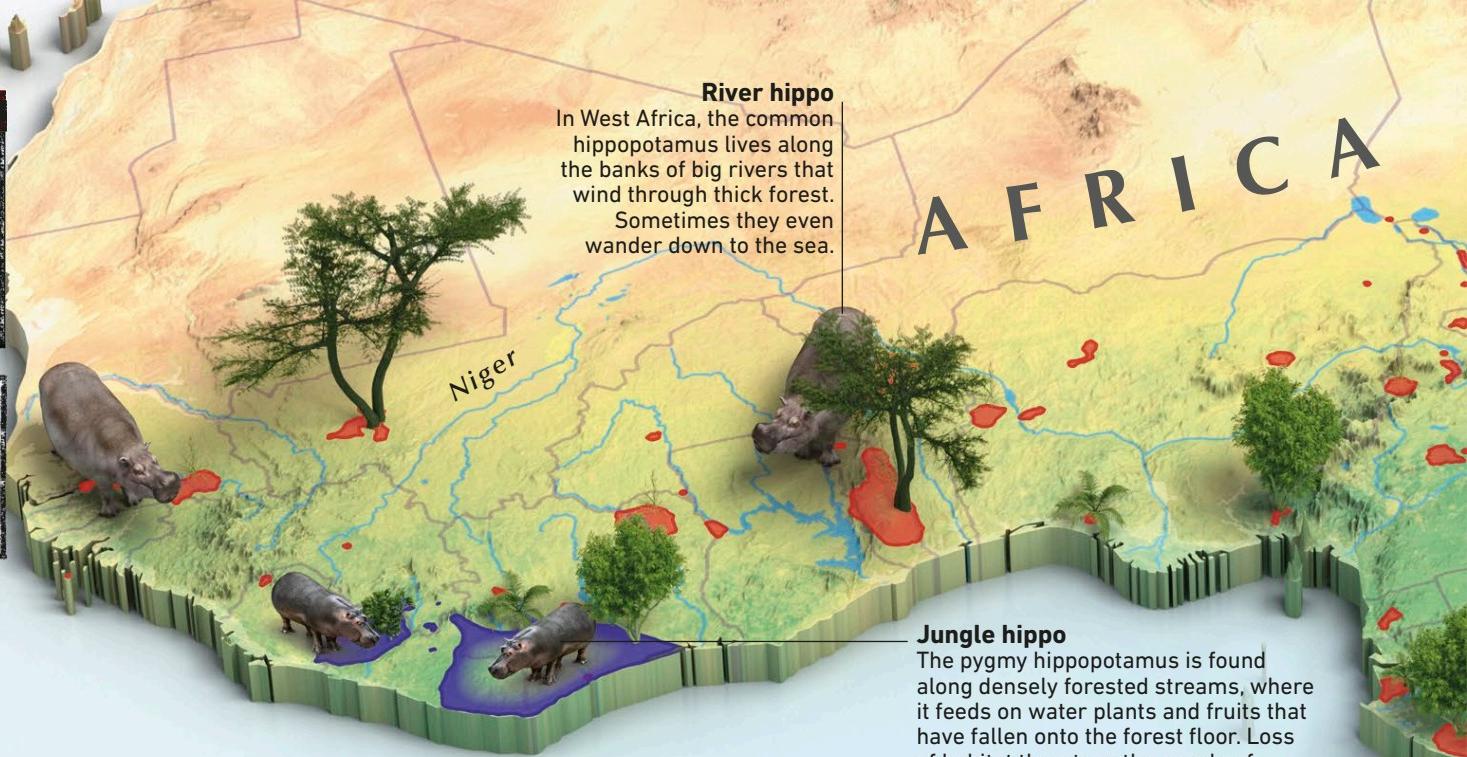
**Guarded treasure**

Rhinos are poached for their horns, which some people wrongly believe have medicinal qualities. Armed guards help protect some rhinos, including this white rhino in Kenya.

ANIMALS IN DANGER		
Common hippopotamus	IUCN status:	vulnerable
Pygmy hippopotamus	IUCN status:	endangered

Population estimate: 115,000–130,000
Population estimate: 2,000–2,500

KEY
Common hippopotamus
Pygmy hippopotamus



Hippos

No big land animal spends as much time in water as the hippopotamus. There are two species, and both live in Africa. During the day they wallow to protect their skin from the sun, with only eyes and nostrils breaking the surface.



Underwater moves
Despite its bulky body, the common hippo can move quickly through shallow water. Since its enormous head makes up 60 percent of the hippo's total weight, it relies on its trotting front legs to avoid toppling forward. Its dense bones keep the hippo weighed to the bottom, so it cannot swim freely in deeper water.





Hippo havens

The common hippopotamus, the larger of the two species, lives in patches of woodland and grassland around rivers across sub-Saharan Africa. The pygmy hippopotamus only survives in a few fragments of rainforest in West Africa.

HIPPOS CAN
HOLD THEIR
BREATH FOR  MINUTES
SUBMERGED
IN WATER



Mini hippo

The forest-dwelling pygmy hippopotamus is about half as tall as its bigger cousin. Shaded by over-hanging trees, it probably spends more time out of water during the day than the common hippo, but its habits are little known.

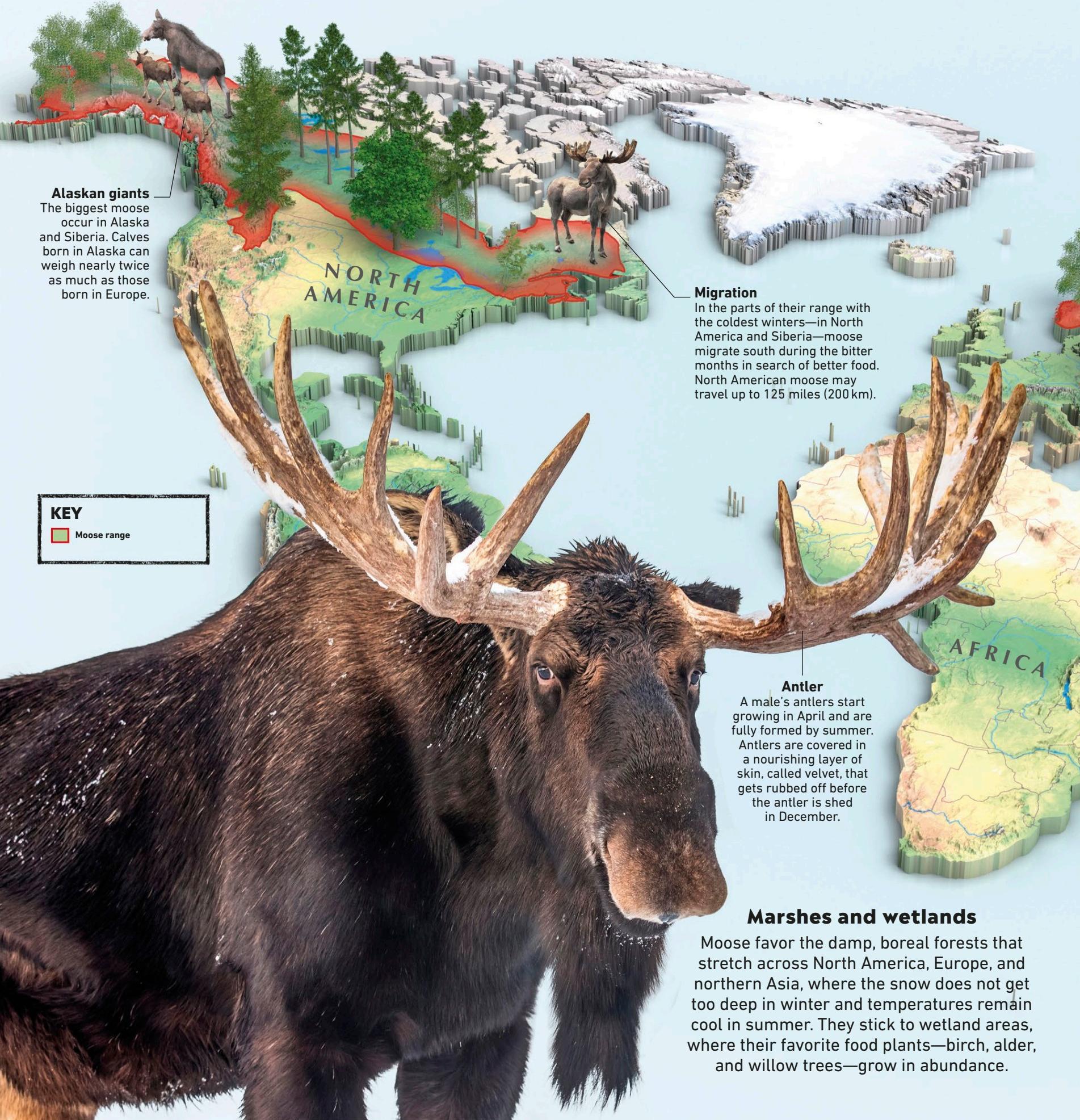
A HIPPO CAN
OPEN ITS
ENORMOUS
MOUTH UP TO
AN ANGLE OF
180
DEGREES—
WIDER THAN
ANY OTHER
LARGE
MAMMAL

ADULT MALE
COMMON
HIPPOS CAN
WEIGH UP TO
4,400 LB
(2,000 KG)

1,700 LB (770 KG) IS THE HEAVIEST RECORDED WEIGHT OF AN ADULT MALE MOOSE



MOOSE ANTLES ARE MADE OF BONE—THEY ARE THE FASTEST-GROWING BONES IN THE ANIMAL KINGDOM



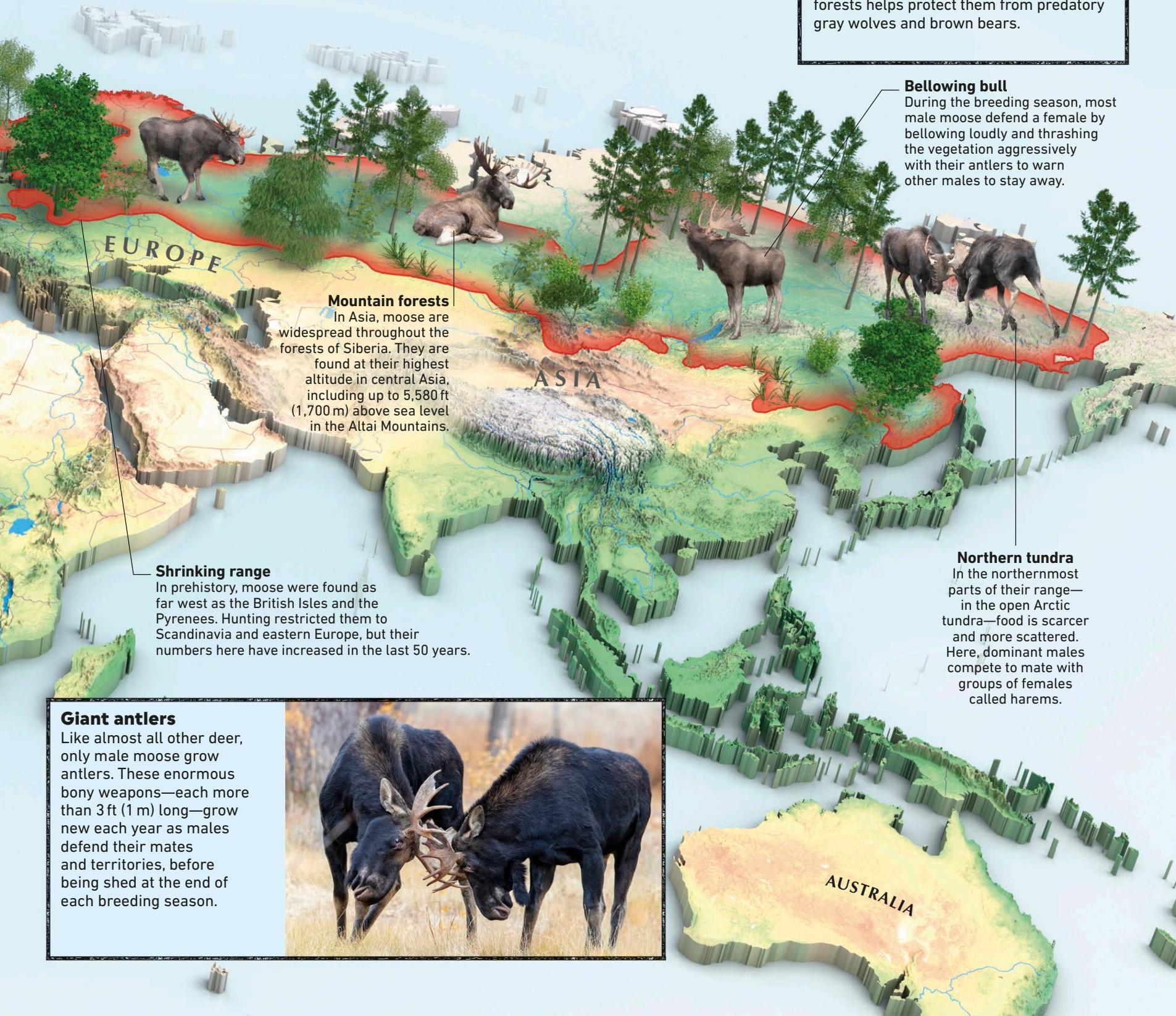
Moose

The world's biggest species of deer also has one of the widest ranges. The moose is an animal of marshy forests and is found across temperate regions of the northern hemisphere—where there is plenty of vegetation to browse and cover for females to raise their calves.



Motherly care

A female moose gives birth to one or two calves and feeds them with milk for up to five months. The thick cover of the northern forests helps protect them from predatory gray wolves and brown bears.

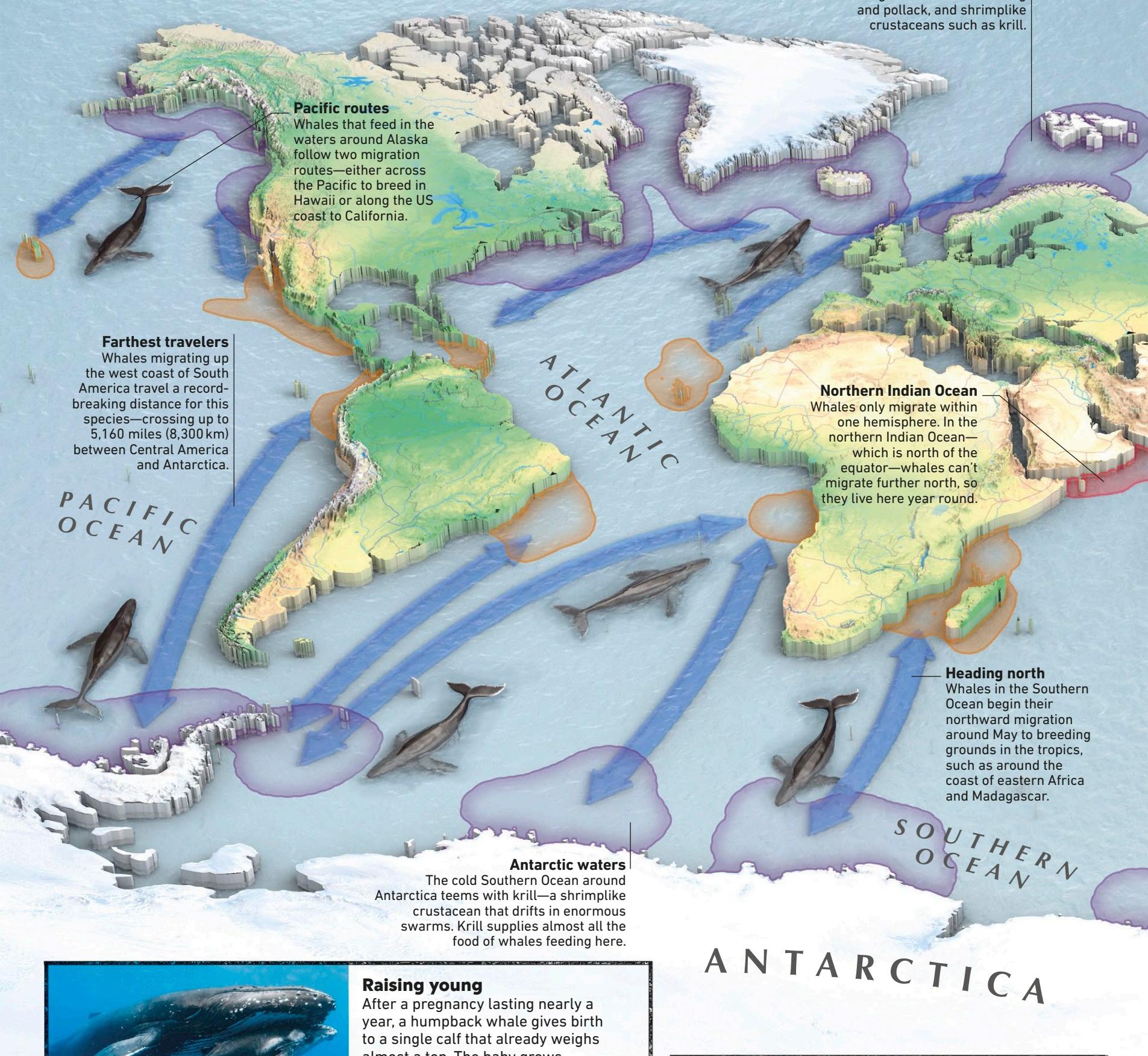


A HUMPBACK WHALE CAN SWALLOW UP TO 4 TONS OF PREY EACH DAY



WHALE SONGS CAN BE HEARD UP TO 20 MILES (30 KM) AWAY

Icy feeding grounds
In the cold waters around the Arctic, humpback whales feed on a mixture of small animals—including fishes such as herring and pollack, and shrimplike crustaceans such as krill.



Raising young

After a pregnancy lasting nearly a year, a humpback whale gives birth to a single calf that already weighs almost a ton. The baby grows quickly on more than 90 lb (40 kg) of milk every day, and stays with its mother for up to a year.

ANTARCTICA

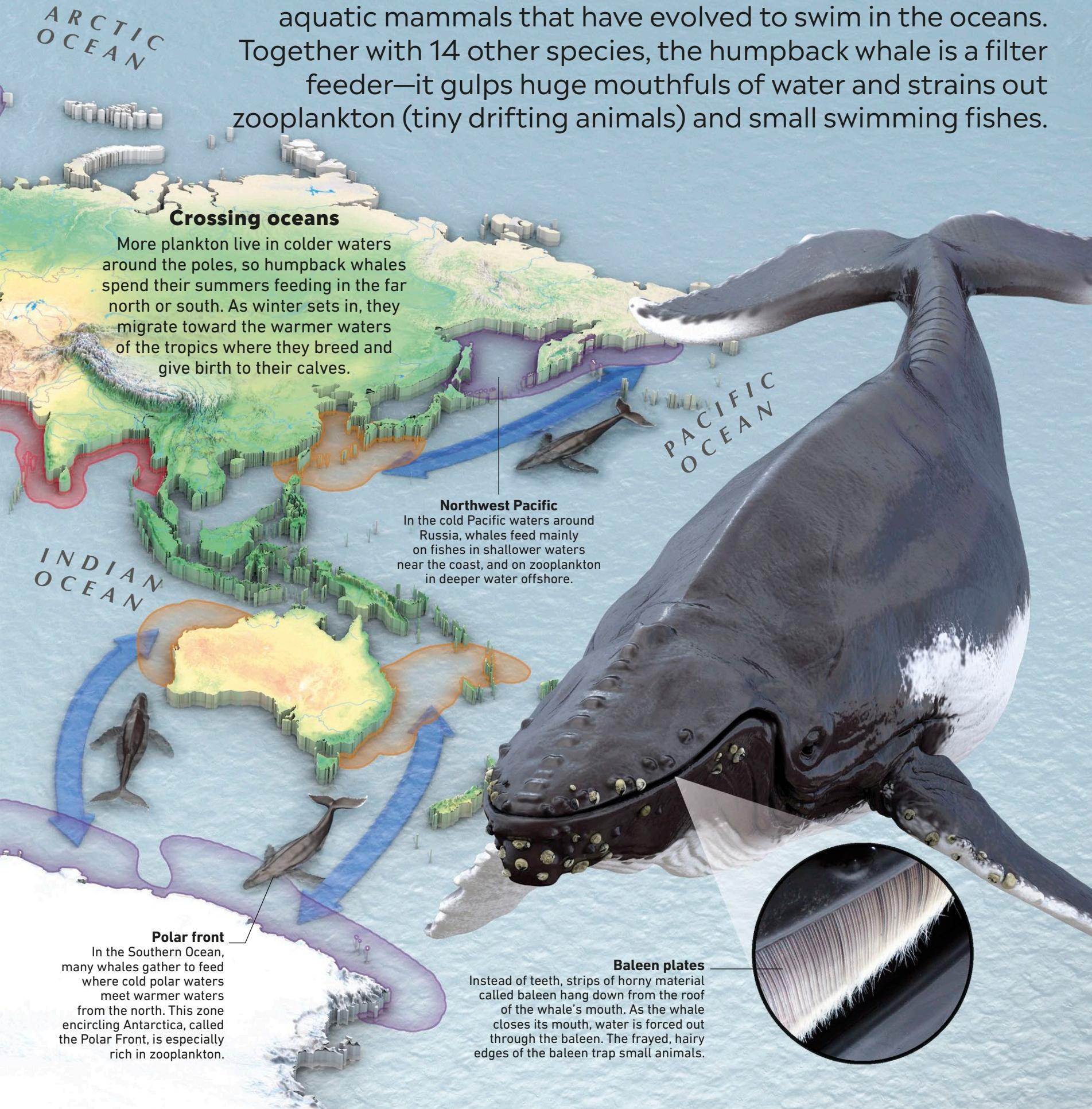
KEY

- Feeding grounds
- Breeding grounds

- Year-round population
- Migration routes

Humpback whale

Along with dolphins and porpoises, whales are cetaceans—aquatic mammals that have evolved to swim in the oceans. Together with 14 other species, the humpback whale is a filter feeder—it gulps huge mouthfuls of water and strains out zooplankton (tiny drifting animals) and small swimming fishes.







Unicorns of the sea

Related to whales and dolphins, the narwhal spends much of its time under the thick winter ice of the Arctic seas, only surfacing between ice sheets to breathe. Males grow a distinctive tusk up to 10ft (3m) long that is actually a long, sensitive tooth. The tusk is likely used to show dominance or during mating rituals.

Glossary

Adaptation

The way in which a living species has evolved its appearance or behavior, to fit in with its environment.

Alpine

Refers to something that lives or grows in mountainous areas.

Aquatic

Describes organisms that live in water.

Arctic Circle

The imaginary line that encircles the Arctic regions of Eurasia and North America.

Biome

A large area that has a particular climate, type of vegetation, and animals living in it.

Browse

Describes when animals feed on leaves and twigs from shrubs and trees, higher above ground.

Bycatch

Fish or other animals caught by mistake in nets laid out to catch other species.

Canopy

The topmost branches of the trees in a forest.

Carnivorous

Describes an animal that only eats meat.

Carrion

The remains of dead animals that scavengers feed on.

Cartilage

The tough, flexible material that makes up the skeleton of animals such as sharks.

Climate

The average weather conditions of an area over time.

Climate change

The process of gradual change to Earth's climate due to human activity.

Cold-blooded

Describes an animal whose body heat depends on the temperature of its surroundings, such as reptiles.

Colony

A group of animals—usually, but not always, of the same species—that live together.

Coniferous

A type of tree or shrub, such as pine, fir, or juniper, that has needles instead of leaves.

Conservation

The saving or protecting of animals or natural habitats.

Continent

One of the seven large landmasses on Earth: North America, South America, Europe, Africa, Asia, Australasia and Oceania, and Antarctica.

Continental shelf

The submerged edge of a continent that lies beneath shallow coastal seas.

Coral reef

A colony of corals growing in a rocklike formation on the seabed, home to a diverse range of marine life.

Crustacean

An animal with a hard external skeleton and paired, jointed legs, such as lobsters, crabs, and shrimp.

Deciduous

A type of tree, such as oak or birch, that loses leaves each year during a cold or dry season.

Deforestation

The cutting down of forests for timber or to clear land for farming or roads.

Delta

A low-lying, fan-shaped area at a river mouth, usually where the river flows into the sea.

Domesticated

Refers to an animal species that has been bred to be tamed and lives alongside people.

Echinoderm

One of a group of animals that includes spiny-skinned marine species, such as starfish and sea urchins.

Endemic

An animal or plant that is native to one specific area and found nowhere else.

Equator

An imaginary line, at 0° latitude, that divides Earth into the northern and southern hemispheres.

Estuary

The part of a river where it flows out into the sea, affected by tides.

Evolution

How animals and plants change over many generations as they survive and adapt.

Exoskeleton

The tough external skeleton of an animal such as an insect.

Extinct

Refers to an animal species that no longer exists because the last remaining individuals have died out.

Fertilization

The joining of male and female cells so they develop into seeds or a new organism. Also when dung or chemical fertilizers are spread on fields to make crops grow better.

Gills

The organ used by fish and other animals for breathing underwater.

Glands

Organs that produce hormones, or substances such as mucus, venom, or poison.

Habitat

The environment or place in which an animal normally lives.

Hemisphere

The northern hemisphere is the half of Earth north of the equator; the southern hemisphere is the half of the globe to the south of it.

Hibernation

When an animal hibernates, or goes into a deep, long sleep, to preserve energy during the cold season.

Incubate

To keep eggs warm so they can develop and hatch.

Intertidal zone

The part of the shore affected by tides. This area is covered by water when the tide comes in, and emerges when the tide goes out.

Invertebrate

An animal without a backbone, for example an insect, worm, or crustacean.

Ivory

The hard substance from which elephant tusks are made.

Jet propulsion

The act of pushing forward by jetting out water, used by squids and octopuses.

Keratin

A tough material that makes up body parts such as hair, feathers, scales, and claws.

Krill

Tiny marine crustaceans that many animals, such as fish, whales, and seabirds, depend on for food.

Larva

The immature stage of animals that hatch from eggs and undergo metamorphosis (complete change) to become adults.

Mangrove

Trees that grow along muddy shores and river banks, often in salty water, and with many of their roots exposed.

Marine

Relating to the ocean or sea.

Metamorphosis

When an animal goes through a major change in body shape during its life cycle, such as when a caterpillar turns into a butterfly.

Microscopic

Something that is very small and can be seen only through a microscope.

Migration

The regular movement of animals from one place to another, often to find food or breed.

Mimicry

When an animal has evolved to look or act like another animal, in order to attract prey, or avoid getting eaten.

Mollusk

One of a group of invertebrates that includes snails, clams, and octopuses.

Monotreme

A group of mammals that lay eggs.

Molt

The way an animal sheds part of its outer skin, coat, or exoskeleton. In crustaceans, the regular shedding of the hard outer skeleton (exoskeleton) to allow the animal to grow.

Nectar

A sugar solution produced by flowers to attract pollinating animals such as bees and butterflies.

Nocturnal

When an animal is active at night.

Nutrition

The process of eating and processing food to absorb substances necessary for life.

Omnivorous

Refers to an animal that eats plants and meat.

Oxbow lake

A U-shaped lake formed from a river bend cut off from a river that over time has changed its course.

Pampas

Wide-stretching, grass-covered plains in temperate parts of South America.

Parasite

An organism that feeds on another, called the host, weakening it, and sometimes eventually killing it.

Pesticide

Chemicals used to kill insects and other pests that eat or damage crops.

Pigment

A substance that gives something color.

Plankton

Small organisms that drift in water.

Poaching

Illegal hunting and killing of wild animals.

Pollination

When insects and other animals carry pollen from one flower to another so that fertilization takes place and new plants can grow.

Prairie

Large, flat grasslands, with very few trees, in North America.

Prehensile

Able to coil around an object and grip it, like the tail of a monkey or chameleon.

Primate

One of a group of animals that includes lemurs, monkeys, apes, and humans.

Proboscis

A long snout, or similar organ.

Protein

A type of complex chemical found in all living things.

Range

Referring to the territory, or area, within which an animal lives.

River basin

The land in which water gathers from one or more rivers.

Roost

To settle for the night, or a place where birds, bats, and butterflies do this.

Savanna

Open grasslands in tropical regions, with only a few trees.

Scavenger

An animal that feeds on the remains of dead animals or other organic waste from living organisms.

Spawning

Releasing eggs and sperm into water so that fertilization can take place.

Species

A group of similar organisms than can interbreed and produce fertile offspring.

Subcontinent

A large landmass that is part of a bigger continent.

Subspecies

A variant of a species, usually only found in one particular area.

Subtropical

An area or climate that is nearly tropical, located at the northern or southern edge of the tropics.

Taiga

The vast coniferous forests covering the northern parts of Eurasia and North America.

Talons

The large, hooked claws of a bird of prey.

Temperate

The mild, variable climate found in areas between the tropics and the cold polar regions.

Thermals

Currents of rising warm air.

Tropical

Referring to the climate or habitats in the region around the equator, known as the tropics.

Tundra

A treeless habitat in the cold, northernmost parts of North America, Europe, and Asia, in which the ground is frozen for much of the year.

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